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The Metal Worke

A WEEKLY JOURNAL OF THE
STOVE, ROOFING, CORNICE, TIN, PLUMBING AND HEATING TRADES.

With which is Incorporated The Stove and Tin Trade Journal, the Sheet Metal Builder, and Metal.

L. LVII.
MBER 14.

NEW YORK AND CHICAGO, APRIL 5, 1902.

ONE DOLLAR A
SINGLE COPIES 5

MILLER'S REVERSIBLE RATCHET DIE PLATES.

WITH HILL'S SOLID DIES ⅛ TO 3 INCHES

Especially adapted for Threading Wrought-Iron Pipes in Cramped Positions, as in Trenches, or in Corners where Lack of Space forbids the Use of the Ordinary Tools of this Class.

OUR CATALOG OF ENGINEERS' AND STEAM FITTERS' TOOLS WILL INTEREST YOU.

VALWORTH MFG. CO.
Boston, 128 Federal St.
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The Gorton Side Feed Boilers

FOR STEAM AND HOT WATER HEATING.

INVESTIGATE FOR YOURSELF.

Send for Catalogue and Prices.

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96 Liberty St , NEW YORK
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STOVE LININGS

McLEOD & HE
TROY, N. Y.

AMERICAN STEAM and ALTITUDE GAUGES, POP SAFETY VALV

Heating Specialties. American Steam Gauge & Valve Mfg. Co., Bismark St., Bos Mass., U

The Track is Clear

for you to make some money this year. We have plenty of **Paragon Furnaces, Steam** and **Hot Water Boilers** and **Excelsior Ranges,** and there are people in your town who are willing to pay a fair price for the best heating and cooking apparatus made. Why can't we get together? We solicit correspondence with reliable dealers everywhere.

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NEW YORK. PHILADELPHIA. BALTIMORE.

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GALVANIZED IRON

Your jobber can always get it—he may not make so much money on it—promptly.

Your jobber may not be ours; he can buy of ours; so can you.

Every sheet and part of a sheet guaranteed.

American Sheet Steel Company, New York

A P. P. Stewart Range

is a thing of beauty and a joy forever.
It sells in half the time it takes to sell
others Therefore, you sell more . .

FULLER & WARREN CO., Troy, N. Y.

This Ad. changes every week.

NOTICE.

Silver. Nickel Platers and Brass Goods Mfrs. MATERIAL FOR DRYING PURPOSES.

Write for prices to John Sommer's Son, 355-365 Central Ave.. Newark, N. J.

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CLOBE and ANGLE VALVES, IRON and BRASS.

All working parts renewable without taking the valve from piping. All parts interchangeable. Guaranteed not to leak at high pressure. Send for circular.

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Pittsburgh.
Galvanized and Black Sh

The Leaders:
Follansbee Pure Iron O
Style; made specially, I
Charcoal Iron Base.
Also, Scott's Extra Coat
well known everywhere
Samples on application.

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Steam Specialties.

RELIEF and ELEVATOR VALVES,
STEAM TRAPS,
STEAM AND WATER REDUCING VALVES,
TANK TEMPERATURE CONTROLLER and
NOISELESS BACK PRESSURE VALVES,
PUMP GOVERNORS,
STEAM and OIL SEPARATORS
A No. 1 DAMPER REGULATORS

KIELEY AND MUELLER,
9-17 W. 13th St., - NEW YORK.

Jenkins Bros.' Valves

are manufactured of the best steam metal, and are fully guaranteed. Why experiment with cheap valves? If you want the ***BEST*** ask your dealer for valves manufactured by Jenkins Brothers. Remember all genuine are stamped with Trade Mark like cut.

JENKINS BROTHERS, New York, Philadelphia. Chicago. Boston,

READ OUR "AD"
Page 8.
MAGEE FURNACE CO.,
Boston.

ROUND OAK
STANDARD OF AMERICA

Long & Durr,
Harmon, Illinois,
write us under date
June 28, 1901:

"The Round Oak Furnace which we put in the school building here after your plans, has given the best of satisfaction, doing more than guaranteed. It is very economical and easily operated. The Board of Directors are highly pleased with the furnace."

We are the originators of the Round Oak System of school house heating with furnace heat.

Where our plans are used we have never failed to give perfect satisfaction.

Should any business of this character offer in your territory at any time and you advise us we will give it prompt attention and guarantee results.

Estate of P. D. Beckwith
Dowagiac, Michigan

MAKERS OF GOOD GOODS ONLY

Experts Say That the Old Fashioned Testimonial
Advertising is the most Effective.
You Can Get Testimonials A-Plenty if You Sell the CARTON "B."

CARTON "B"

WARM AIR FURNACE.

FOR SOFT COAL.

A Furnace with an Established Reputation
For Thorough Efficiency
Strong in Every Detail.
Made to Endure.

International Heater Co.,

UTICA, N. Y.

BOSTON. NEW YORK. CHICAGO. DENVER.

LARGEST MAKERS OF HEATING AND LIGHTING APPARATUS IN THE WORLD.

CATALOGUE OF OUR ACETYLENE GAS MACHINE WILL INTEREST YOU.

Moore's STOVES & RANGES

A RELIABLE THERMOMETER

In a house, is useful in regulating the winter's heat. It is many times more useful in determining and regulating the wide range of temperatures required in an oven. Our Thermometers are the best made. We guarantee them to be reliable and recommend their use. They will more than give satisfaction.

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CLEANOUT
THE PITTSBURGH STOVE & RANGE CO

Cinderella
Steel Ranges
REPRESENT
The Best Materials,
The Best Construction,
The Best Workmanship.
THEY ARE
The American Standard for Excellence.

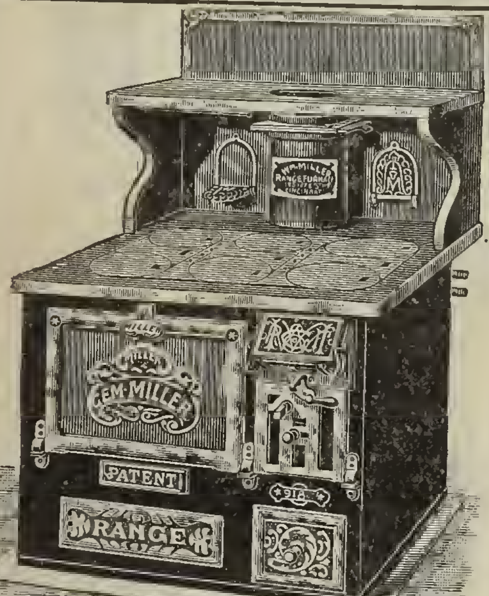
ALL STYLES AND SIZES AT
MODERATE PRICES.

We would be pleased to send our catalogue.

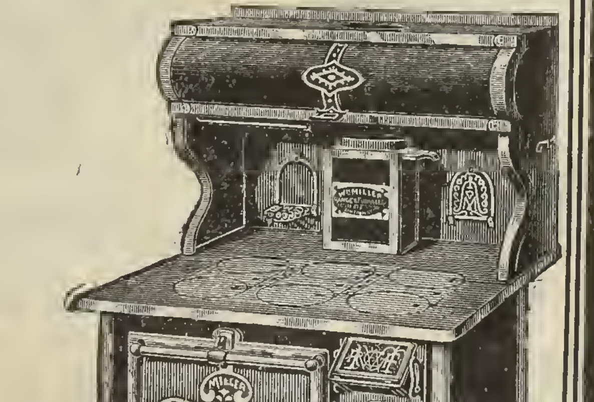
STOVES AND RANGES + CINDERELLA + NEVER FAIL

PITTSBURGH STOVE & RANGE CO.,
PITTSBURGH, PA.
WESTERN SALES AGENT,
W. D. Sager, 38 and 40 Michigan St., Chicago, Ill.

STOVES AND RANGES + CINDERELLA + NEVER FAIL



MILLER
RANGES



Perfect in Operation,
Elegant in Design and
Beautiful in Finish,
Workmanship and Style.
WRITE FOR CATALOGUE AND PRICES.
The WM. MILLER RANGE and FURNACE CO.,
Nos. 125 and 127 E. Fifth Street, CINCINNATI, O.

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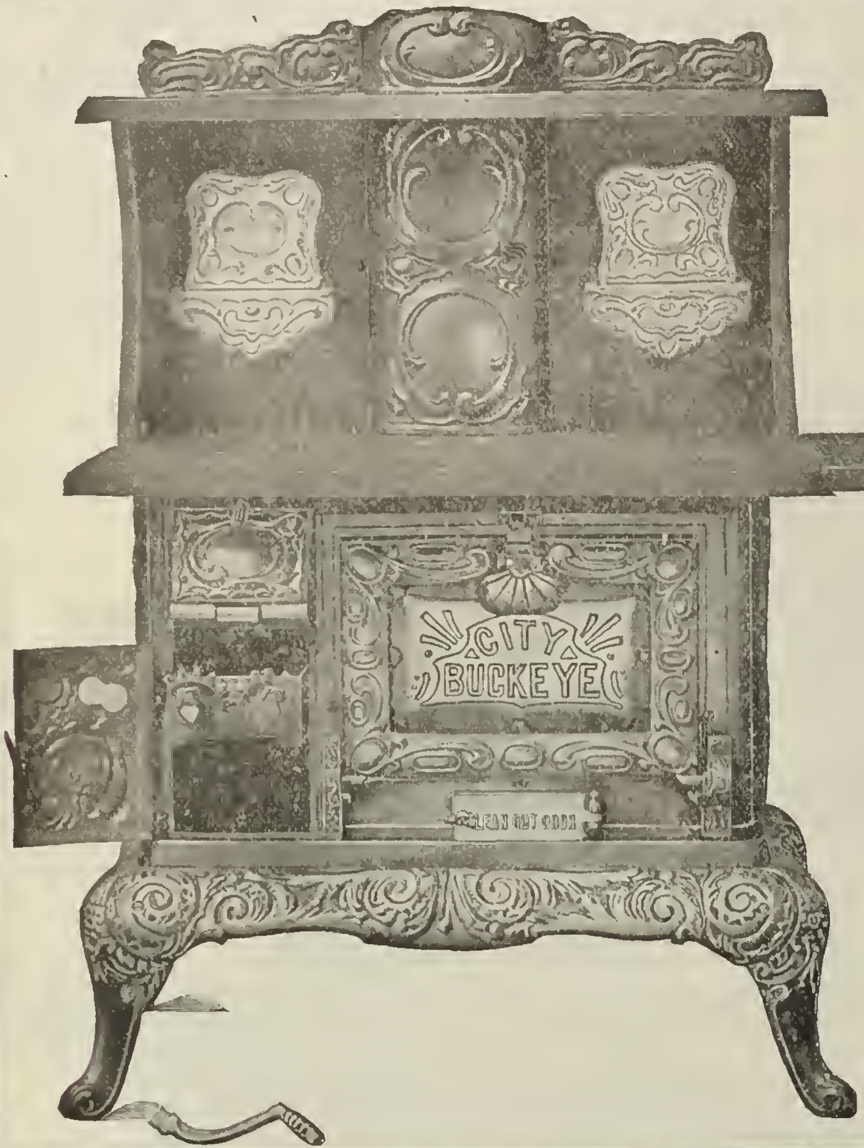

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For Hard, Soft Coal, Wood or Coke.

MADE IN 17 AND 19 INCH OVEN.

Square Top and Bracket Reservoir Fitted with Water Heater.

AN ATTRACTIVE PIECE OF GOODS AND . . .

A Ready Seller.

Write for Descriptive Catalogue and Prices.

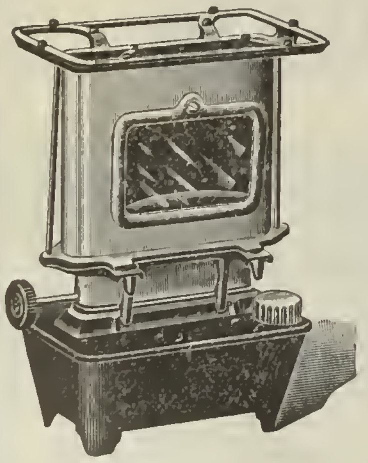
OHIO STOVE CO.

Portsmouth, Ohio.

THE TAYLOR & BOGGIS FOUNDRY CO.,

MANUFACTURERS OF

LIGHT GRAY IRON CASTINGS.



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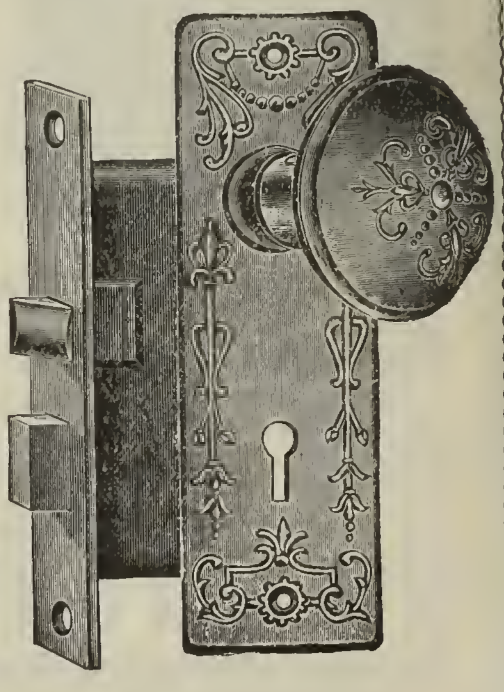
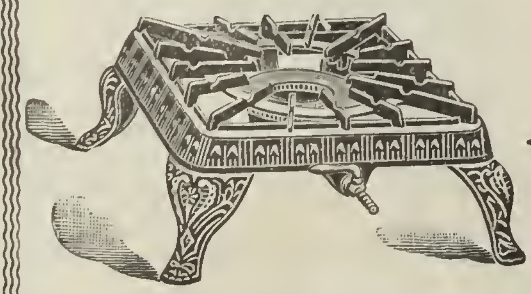
Furnace Lamps,
Molasses Gates,
Letter Boxes,
Hardware Specialties.

CLEVELAND, O.

" Hudson " Design.





OUR CATALOGUE, SHOWING

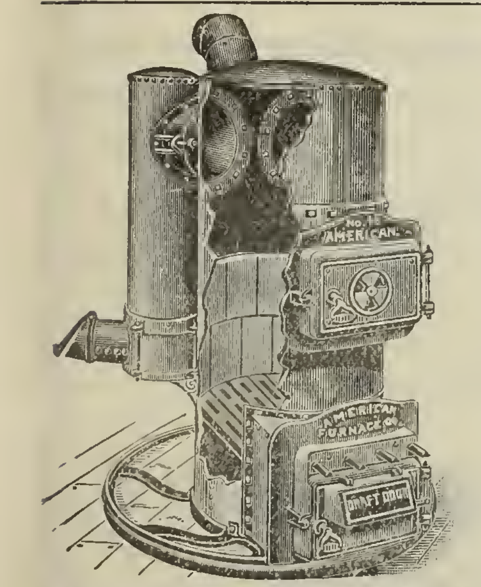
GAS RANGES
CAST RANGES
STEEL RANGES
STEEL COOKS
HOT PLATES
CAST and STEEL HEATERS

WILL BE FURNISHED FOR THE ASKING BY

STAR STOVES AND RANGES ENTERPRISE STOVE CO. VINCENNES, IND. GUARANTEED

Enterprise Stove Co., VINCENNES, IND.

About Fire Pots.



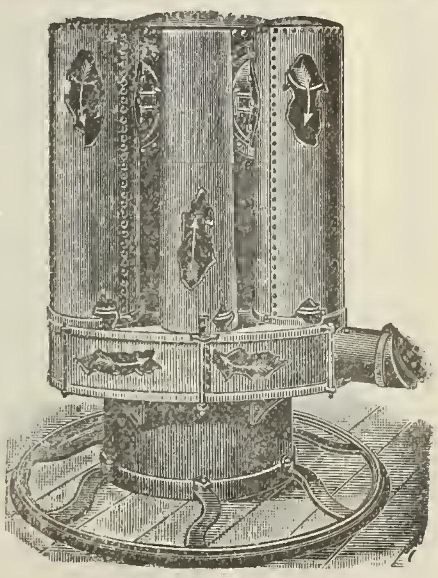
Burn Hard or Soft Coal, or Coke. Large Doors.

We formerly lined our fire pots with cast iron—then they cracked and warped. Now we use fire brick for lining and will guarantee it for five years. The lining is replaced through the fire door.

The **AMERICAN FURNACE** is made strong in places where other furnaces have proven weak ; it is made of heavy steel and riveted tight like a boiler. Will burn any kind of fuel.

You can only build up a permanent furnace business by handling a first-class furnace. We manufacture for the better class of trade.

The American Furnace Co.,
1911-13 PINE STREET, · ST. LOUIS, MO.



Large Radiators, easy to clean out.

Write for prices and secure the agency before the other fellow gets it.

REFRIGERATORS,
BLUE FLAME OIL STOVES,
GASOLINE STOVES.

LARGEST JOBBERS in NEW ENGLAND.

GAS RANGES,
FURNACES, STOVES,
RANGES AND REPAIRS.

HENRY N. CLARK CO., 56 and 58 UNION ST., **Boston, Mass.**

BRAND STOVE CO.

STOVES, RANGES and FURNACES.
SEND FOR CATALOG.
MILWAUKEE. WIS.

ACME LINE, 1902.

Asbestos Lined Ranges and Ovens, Cookers and Hot Plates.

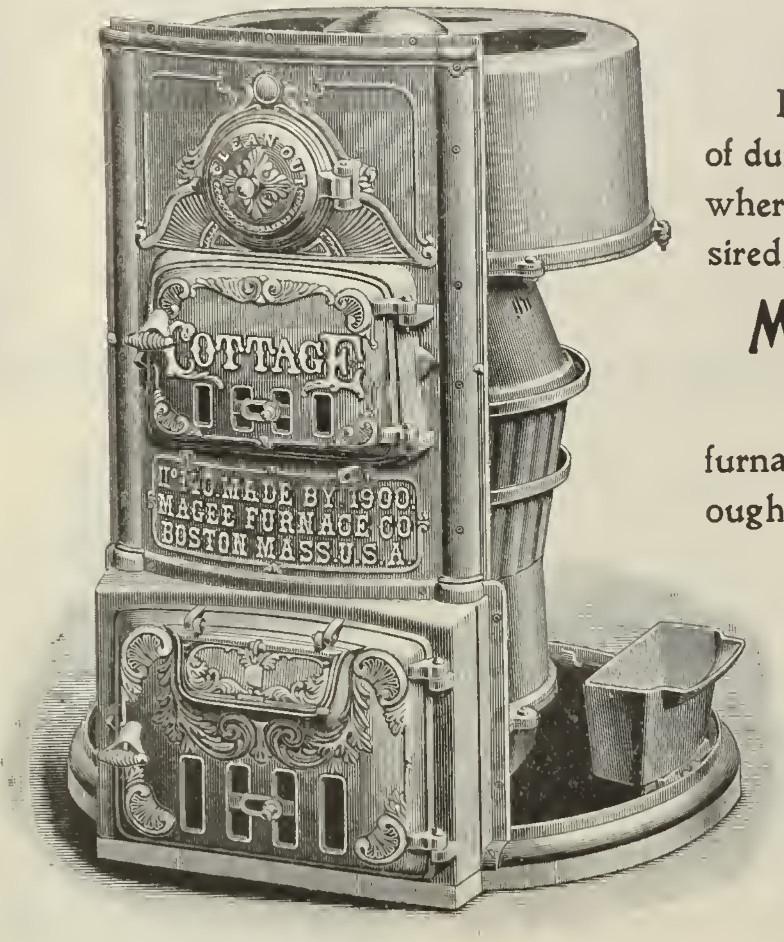
FOR ALL GASES.

Catalog No. 35 on application.

H. ADLER CO.,
PITTSBURG, PA.

HENRY WATERMAN, - - 195 Lewis St., N. Y., Eastern Agent.

Specially Constructed for Low Cellars. Fitted with Cast Iron Return Flue Radiator, giving Liberal Flue Capacity without Decreasing Warm Air Chamber.



MOST COMPLETE LINE UNDER ONE NAME IN THE UNITED STATES.

IF IT'S A QUESTION OF PRICE.

In order to meet the demand for a furnace of durable construction and powerful radiation, where a high-class furnace at a low price is desired, we manufacture the

Magee Cottage Furnace.

It isn't a CHEAP furnace, but it's a GOOD furnace. Its castings and other parts are thoroughly well made and sufficiently heavy to stand the strain subjected to them by the fire.

CAST TO LAST.

SEND FOR FURNACE CATALOGUE.

MAGEE FURNACE CO.,
BOSTON.

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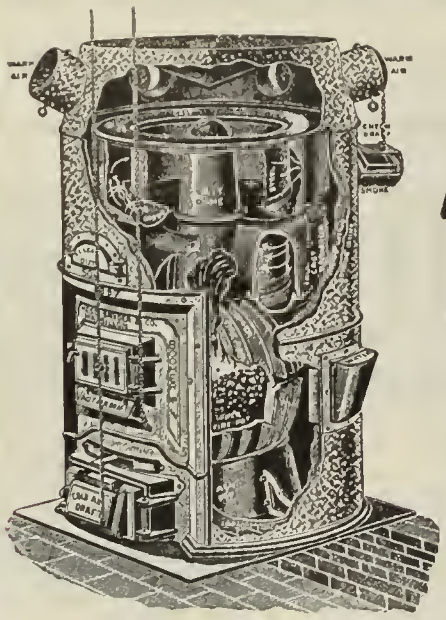
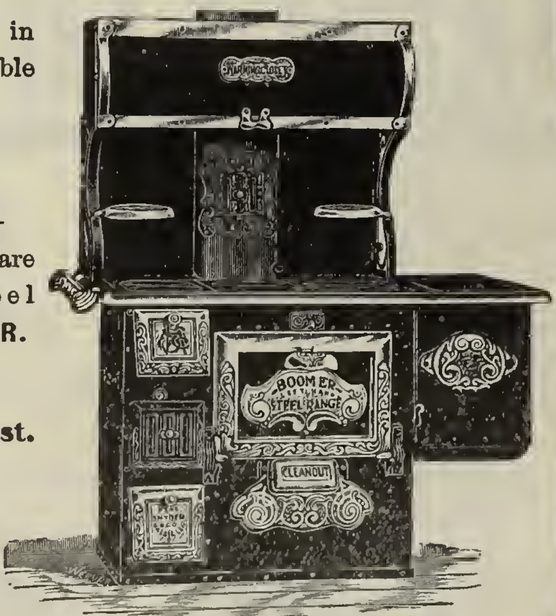
REGARDING
Boomer Furnaces.
OR
Boomer Steel Ranges



We want to state in strongest terms possible that if you want the
HEAVIEST,
MOST DURABLE,
MOST ECONOMICAL
and easiest to take care of Furnace or Steel Range, buy a **BOOMER.**

Boomer Furnace.

Neither time nor money is spared to make them the Best.
Buy Boomers and save your coal bills.
We invite investigation.



Boomer Steel Range.

THE HESS-SNYDER CO.,
Manufacturers, MASSILLON, O.

THE H. B. SMITH CO.,
WESTFIELD, MASS., U. S. A.

Catalogue furnished only upon application to

Heating Contractors, Engineers and Architects

92 Pages. Size 9 x 12 Inches.

COTTAGE BOILERS.

STEAM BOILERS (8 SIZES), 550 SQ. FT. RADIATION SUPPLIED.
WATER BOILERS (8 SIZES), 900 SQ. FT. RADIATION SUPPLIED.

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HOLBROOK, MERRILL & STETSON,
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BREMEN AND NEW YORK CITY.

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THE H. B. SMITH CO.,

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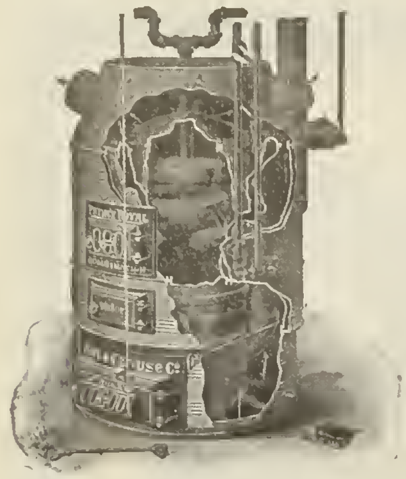
PHILADELPHIA.



Royal Heaters.

HART & CROUSE CO.,

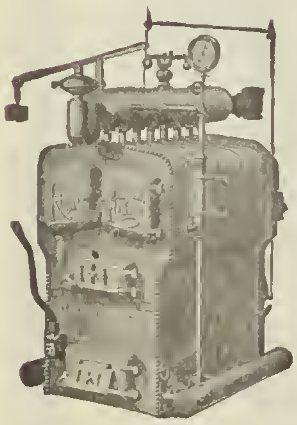
235 Water St.,
New York.

78 Lafayette St.,
UTICA, N. Y.

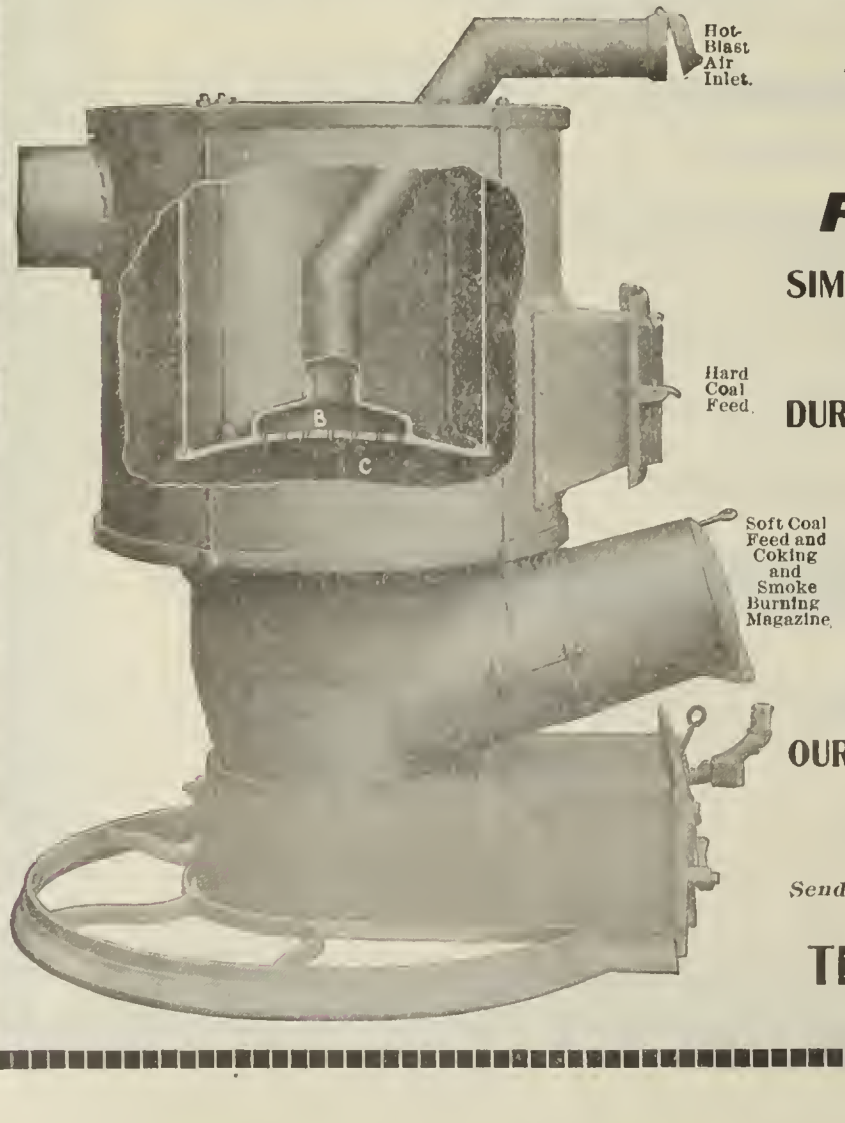
79 Lake St.,
Chicago.

The Leading Line of Heating Apparatus.

HOT WATER,
STEAM,
HOT AIR.



THE PATRIC FURNACE.


Hot-Blast Air Inlet.
B
C
Hard Coal Feed.
Soft Coal Feed and Coking and Smoke Burning Magazine.

HAS

TALKING POINTS

OF MERIT

FOR THE DEALER.

SIMPLICITY.

In construction the Patric Furnace is exceedingly simple. This point always appeals to the prospective purchaser. No clogged radiator. It needs no clean-outs. Look at the illustration and see for yourself.

DURABILITY.

This is one of our hobbies. The Patric Furnace is noted for its durability. One man writes that his furnace has been in use every winter since 1873, twenty-nine years, and still heats as well as when it was first put in. Good materials account for that. We use them now and always have.

SMOKE-BURNING and COKING MAGAZINE.

Here's where we have a winner. It is a scientific feature that sells lots of Patric Furnaces. Used only on the Patric. A success for the past 17 years. Highly recommended by our customers. Cokes the coal and burns the volatile parts of the smoke and gases. A great talking point.

OUR HOT-BLAST.

Our hot blast device for aiding combustion delivers heated air directly into the combustion chamber. No part in the fire to clog or burn off. Your customers must have a hot-blast.

Send for catalogue, price-list and discounts to dealers.

THE PATRIC FURNACE CO.,
SPRINGFIELD, - OHIO.

UTICA HEATERS

Work Perfectly in Public Buildings.

This is only one letter—we have dozens more, all unsolicited, "up our sleeve."

BURGERT & BANISTER,

Builders' Hardware, Stoves, Tinware and House Furnishings.

Galion, Ohio, March 26, 1902.

UTICA HEATER CO., Utica, N. Y.

GENTLEMEN :

The "Utica Heater" which we put into the Public Library building here is proving a profitable piece of public spiritedness for us.

The Directors and Patrons of the Association are very generous in their applause of the heater, giving us all kinds of free advertising.

The President tells us that they heated the building one week with 30c. worth of coke, and in cold weather at that.

We have sold one big job on the strength of it, and have several others in view.

We are pretty well satisfied with the deal in general, and the "Utica Heater" in particular.

Yours truly,
BURGERT & BANISTER.

UTICA HEATER.

We manufacture hot air furnaces,—11 different styles, 48 different sizes,—for all possible requirements.

We also manufacture a very extensive line of steam and hot water boilers,—10 different styles, 128 different sizes.

Drop a card to-day for our illustrated catalogues and circulars, and we will gladly quote you rock bottom discounts. "They will do you good."

UTICA HEATER CO.,

Manufacturers,

UTICA, N. Y.

THE BOYNTON FURNACE CO.
TRADE MARK
EST 1849 INC 1884

Before making up your mind what lines you are going to handle during 1902 get our catalogs and prices.

WE MANUFACTURE *Direct Draft and Indirect Draft Warm Air Furnaces, fitted with either cast iron or steel plate radiators, also fitted with flat or triangular grates, as desired.*

WE MANUFACTURE *Round and Sectional Hot Water Heaters and Steam Boilers to meet all requirements and for burning any kind of fuel.*

WE MANUFACTURE *Cast Iron Cooking Ranges.*

WE ARE HEADQUARTERS FOR YOUR REQUIREMENTS.

Remember, we can make prompt shipments.

The BOYNTON FURNACE CO.

NEW YORK. CHICAGO.

NOW READY

Our 1902 Boiler Catalogue

handsomely illustrated
and showing a few

New Types of Ideal Boilers.

A Postal card request will secure
for you a copy of the first edition.

AMERICAN RADIATOR COMPANY

Lake and Dearborn Streets
Chicago, U. S. A.

Boston
New York
Buffalo
Philadelphia

St. Louis
Minneapolis
Denver
London

'Tis Never Too Late To Learn!

COMFORT FURNACE.

If you do not KNOW
that we make

HARD COAL Furnaces,
SOFT COAL Furnaces,
ALL CAST Furnaces,
STEEL RADIATOR Furnaces,
HIGH GRADE Furnaces,
MEDIUM GRADE Furnaces,

NOW IS THE TIME TO LEARN ALL ABOUT THEM.

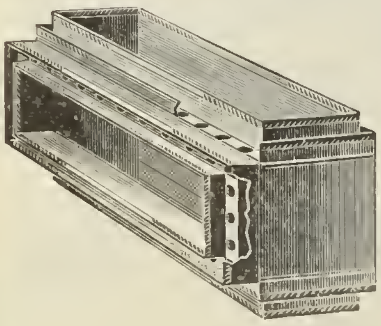
WRITE AND GIVE US AN OPPORTUNITY TO TRY TO INTEREST YOU.

THE GRAFF FURNACE CO,

208 Water Street, New York.

FURNACES PIPE

EXCELSIOR HEATING SPECIALTIES



WE ARE MAKING

Very Low Prices

on our full line for present and future deliveries and solicit

Your Inquiries

Our Stove Pipe and Elbows, also Furnace Pipe are the Best made.

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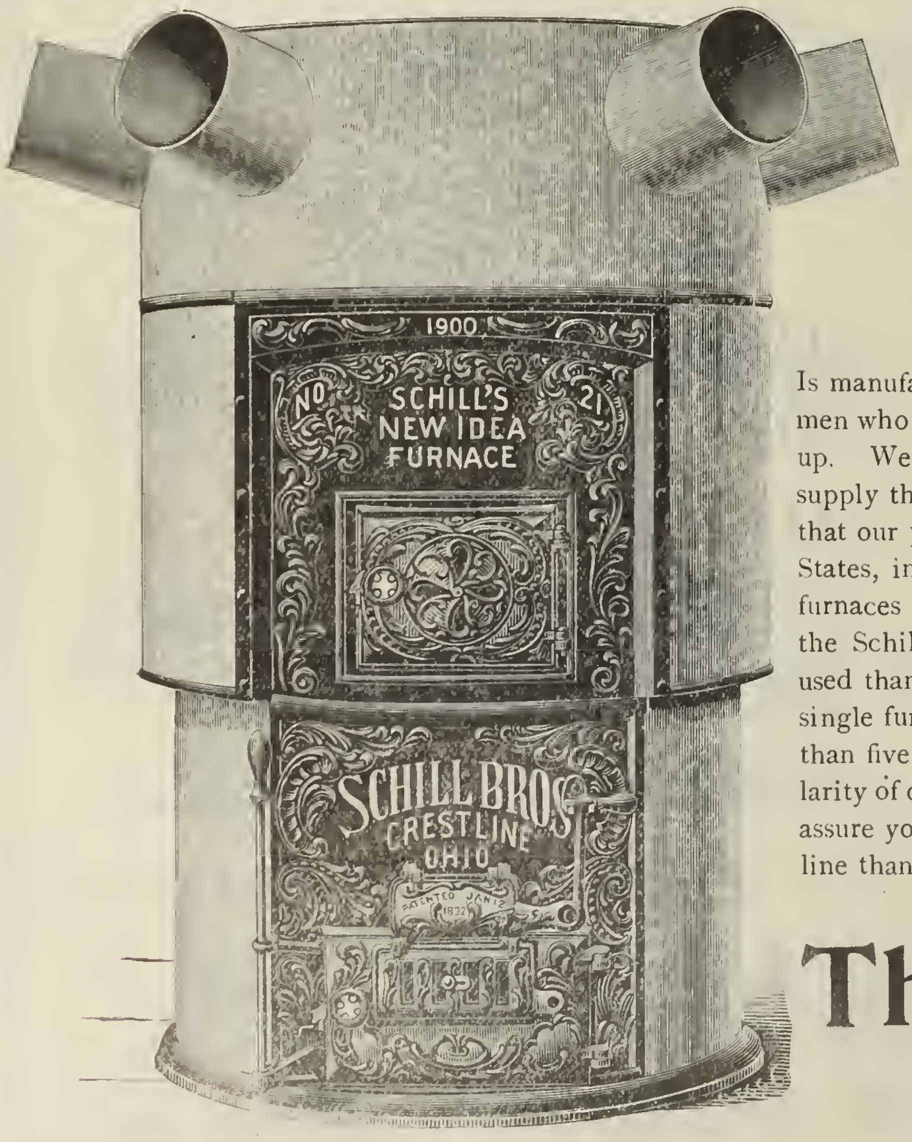
EXCELSIOR STEEL FURNACE CO.
38-40 W. MONROE ST.-CHICAGO.



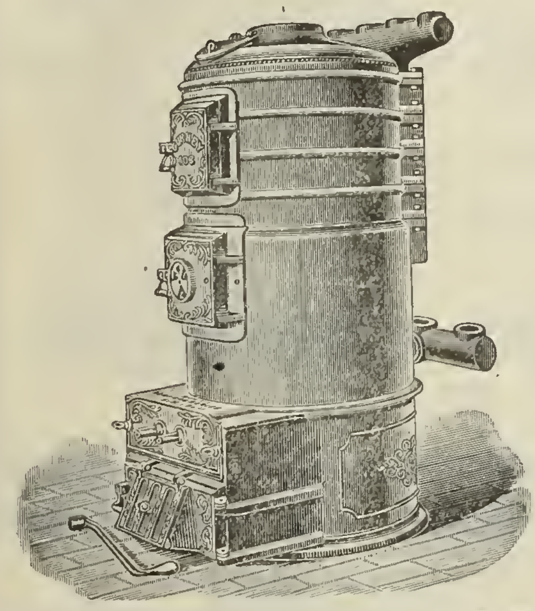
SCHILL'S New Idea Furnace

Is manufactured by a firm composed of practical furnacemen who have been in the business from their boyhood up. We have studied the wants of the people and to supply their wants has been our constant aim. The fact that our products have found their way into twenty-eight States, including almost every State in the Union where furnaces are used, and that in Crestline, O., the home of the Schill Furnaces, where, perhaps, more furnaces are used than in any single town of its size in America, not a single furnace of any other make has been sold for more than five years, demonstrates, beyond a doubt, the popularity of our furnaces at home as well as abroad, and we assure you no one is better prepared to serve you in this line than we are.

The Schill Bros. Co.,

CRESTLINE, O.

Never Over-Rated. . . . .



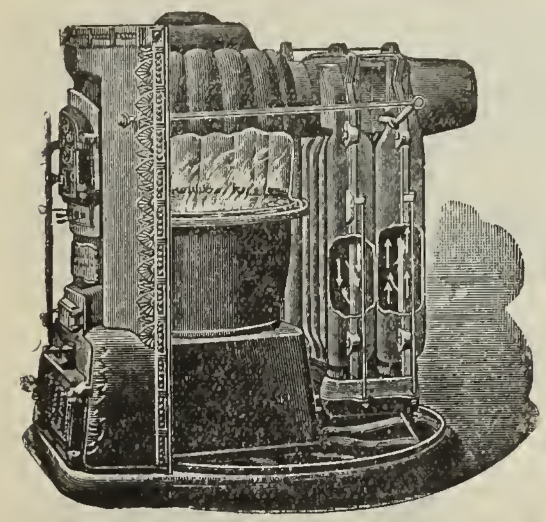
GURNEY HEATERS are never over-rated, neither in the estimation of the public nor in our claims for them. They will do exactly the work we say they will do. We declare that **GURNEY HEATERS** have no equal for efficiency, durability and economy. On account of the excellence of their construction they will maintain temperatures longer and require less fuel.

Do you not wish to handle the best? Write us for catalogues, etc.

GURNEY HEATER MFG. CO.,

74 Franklin St., Boston. 111 Fifth Ave., New York City.

Western Selling Agents, James B. Clow & Sons, Franklin and Harrison Sts., Chicago, Ill.



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GURNEY & CO.,

Washington, Hanover and Elm Streets, Boston, Mass.

Bengal Furnaces

ARE TRADE WINNERS.

Most powerful and compact furnace ever produced.—Over 3500 square inches radiating surface.—More than any other furnace their size.

ALL CAST IRON.

YOU NEED THEM IN YOUR BUSINESS.

Secure a BENGAL AGENCY at once.

WRITE US FOR CATALOGUE AND PARTICULARS.

FLOYD, WELLS & CO., Royersford, Pa.

NEW YORK OFFICE, 210 WATER ST., R. W. HILLMAN, Manager.

The FORBES FURNACE.

Height over all, 4 ft. 3 inches.

You run no risk in putting in the

Forbes Furnace.

When properly installed we guarantee them in every case.

They are constructed entirely of cast iron.

No sheet iron drums.

Our radiating tubes are 1/8 in. thick, and will wear for years.

Specially suited for low cellars.

SEND FOR CATALOGUE AND FULL PARTICULARS.

Tubular Heating & Ventilating Co.,

228 Quarry St., Philadelphia, Pa.

STOVE REPAIRS

Bought from us entitle the purchaser to a 1000 mile book *Free*, on any railroad. Have you received one of them?

CHAS. C. HEATH & CO., Philadelphia and Baltimore.

Write us for particulars.

The Haxtun
Defender
Great Northern
The Superior
Tabasco

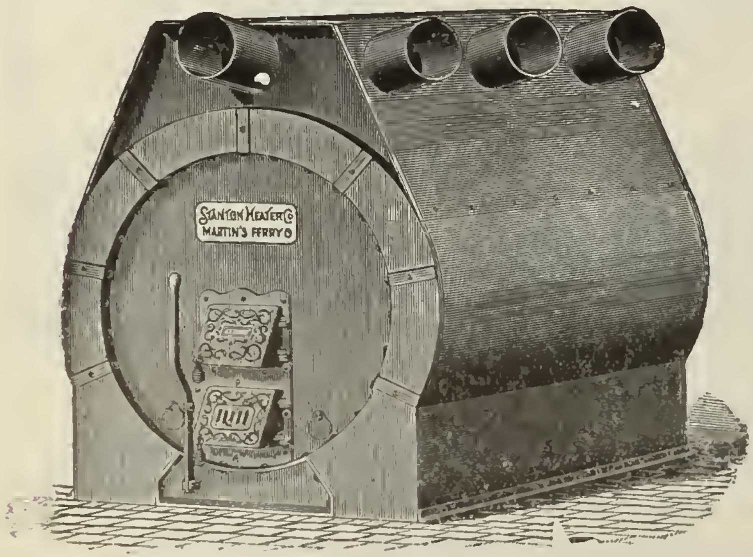
DON'T

look any further if in search of boilers for steam heat or hot water. The list opposite contains the standards. Send for catalog and get acquainted with them.

KEWANEE BOILER COMPANY
KEWANEE, ILLINOIS.

The Stanton Seamless Heater,

PORTABLE CASED.



STATE COLLEGE, PA., June 15, 1900.
THE STANTON HEATER CO , Martin's Ferry, Ohio.

GENTLEMEN :—The Stanton Heater is giving the best kind of satisfaction. It will produce good heat from any kind of fuel. My average cost of fuel, per month, for the past winter was three tons of coal dust from soft coal to heat 43,000 cubic feet of space with a No. 68 Heater ; however, this space is 3,000 cubic fect over the capacity of your Heater, but the heater did the work easy, and held the temperature in zero weather so it would not change over four degrees in twelve hours without touching the Heater.

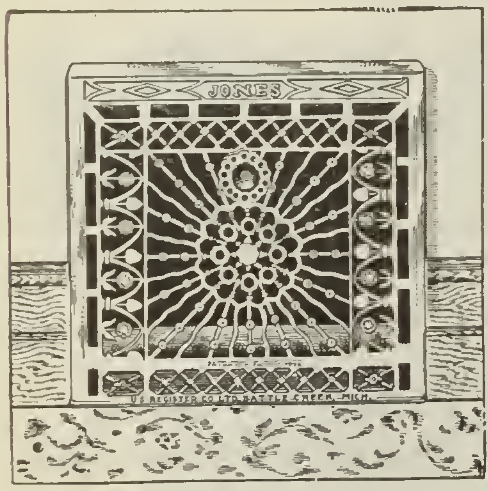
The Stanton Heater is, in my judgment, the most modern and economical warm-air generator of this age.

Sincerely yours, J. N. KRUMRINE.

SEND FOR CATALOGUE.

THE STANTON HEATER CO.,
Martin's Ferry, Ohio.

See Our Advertisement Next Week.

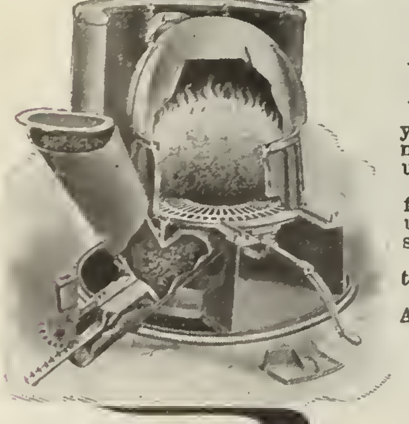

JONES
U.S. REGISTER CO. LTD. BATTLE CREEK, MICH.

THE FURNACEMAN'S CHOICE

THE JONES
Side Wall Register
IS THE ONE THAT IS
NOISELESS,
FIREPROOF,

With **50 per cent. more capacity than others.** The one that has a **DOUBLE METAL REGISTER BOX** included with the register, and is **ready to INSTALL when received.**

MANUFACTURED BY
THE UNITED STATES REGISTER CO., Ltd.,
61 & 63 E. State St., Battle Creek, Mich.



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Peck-Williamson Underfeed Furnace
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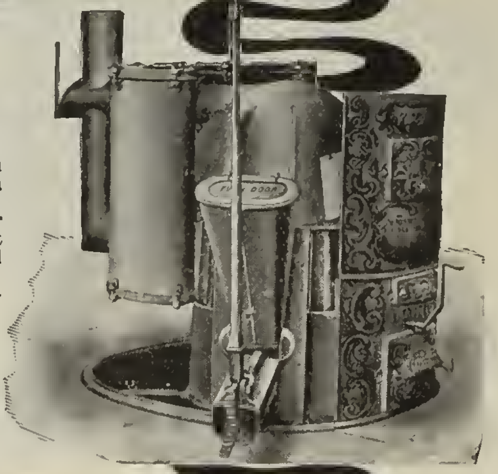

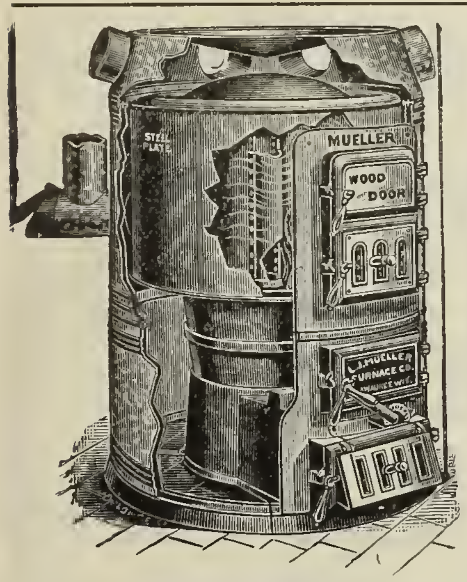

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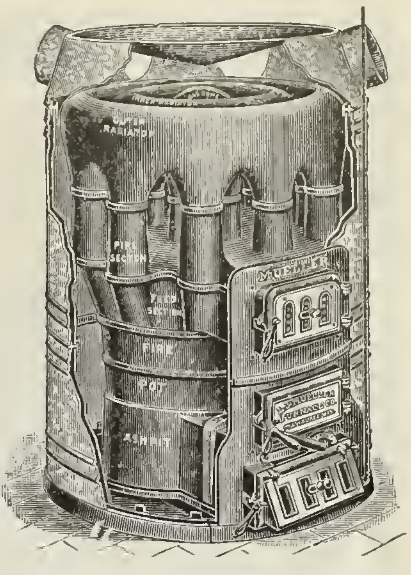

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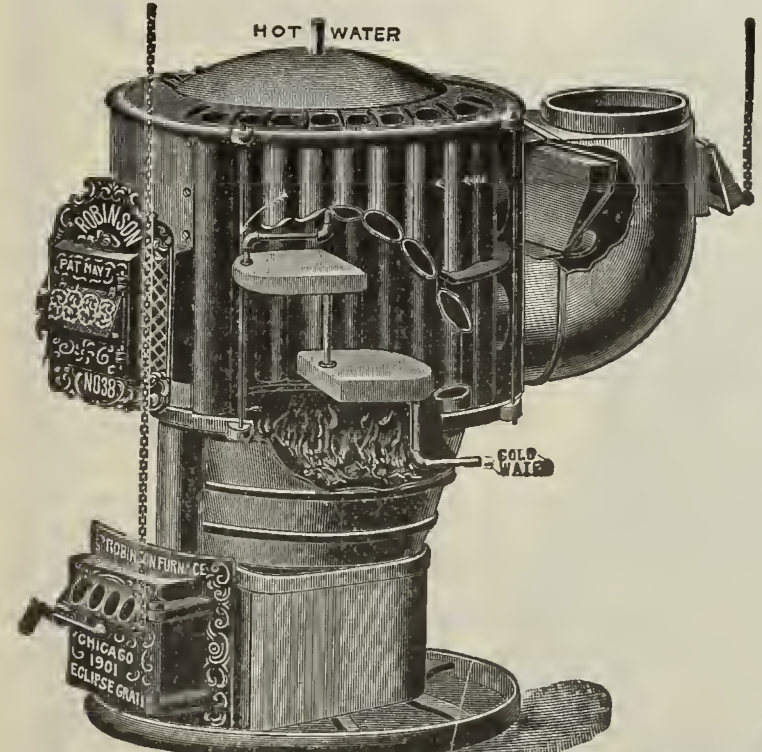

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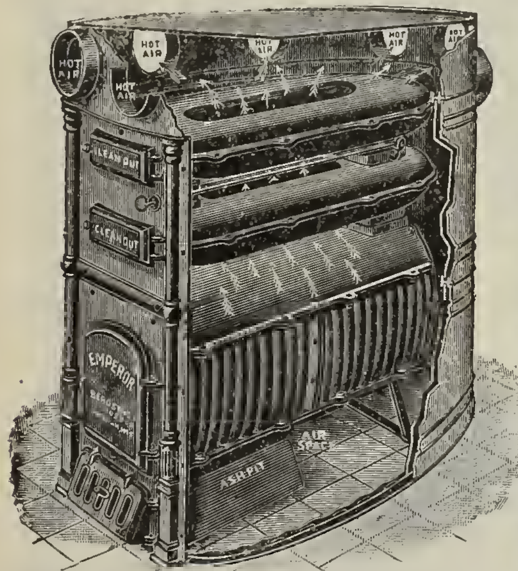

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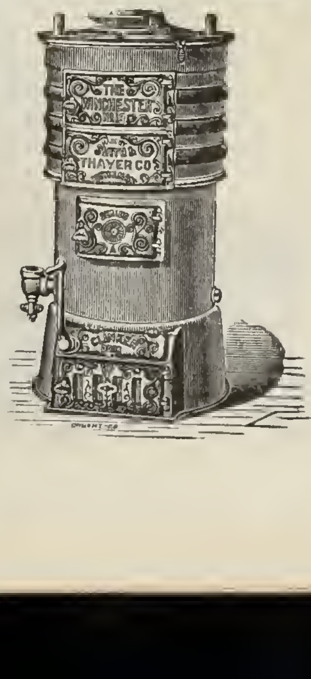

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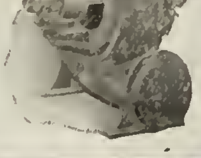

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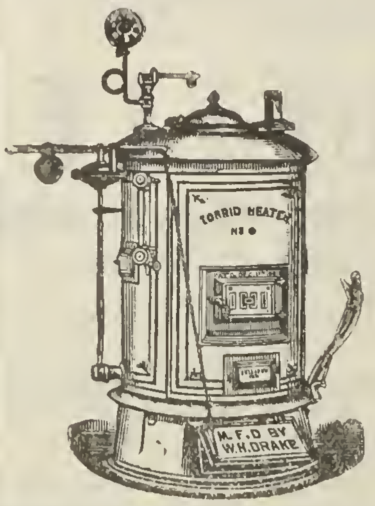

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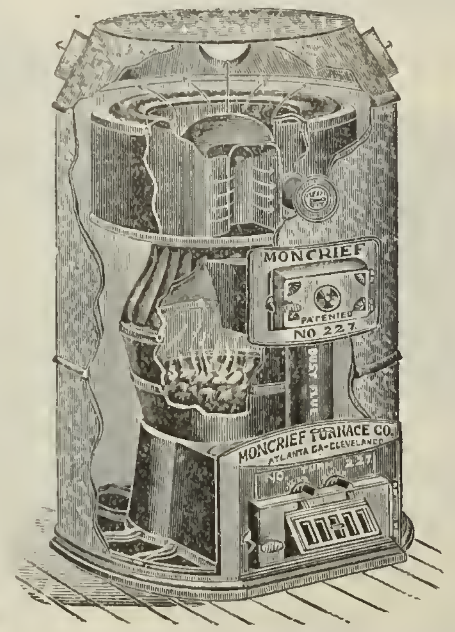
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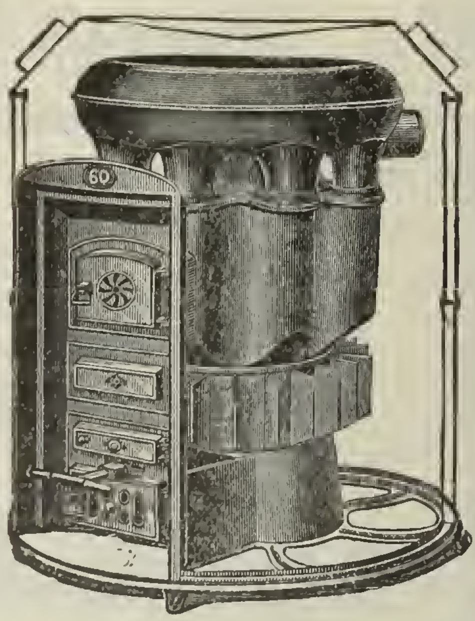

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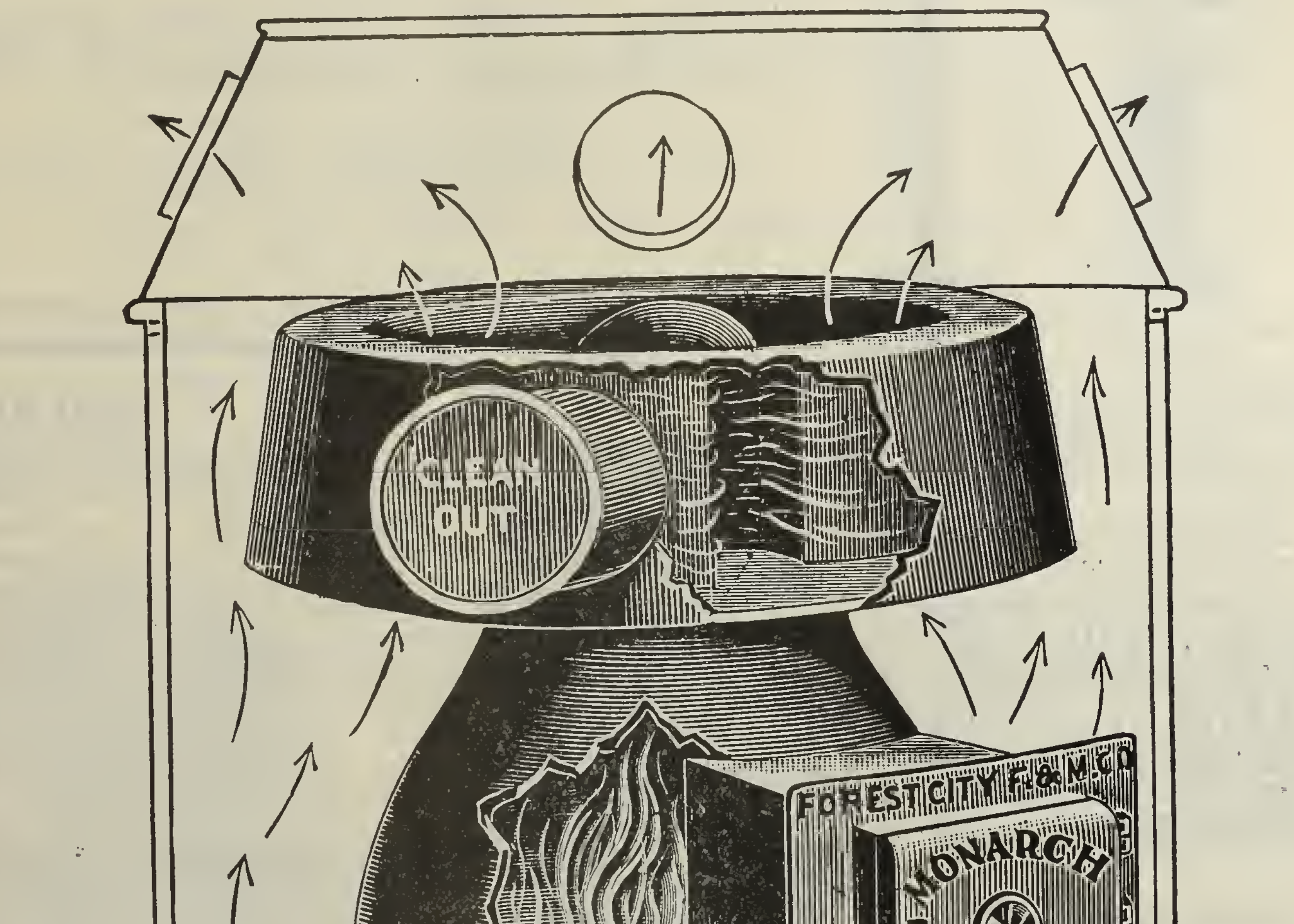

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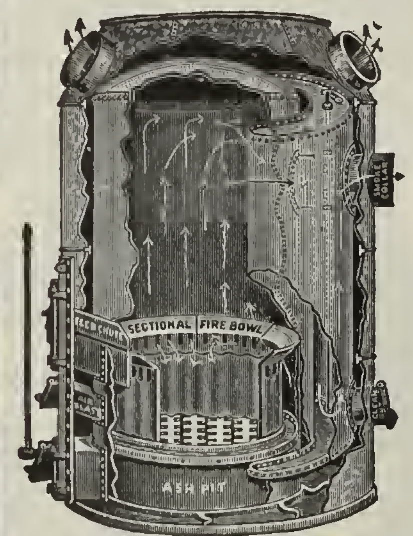

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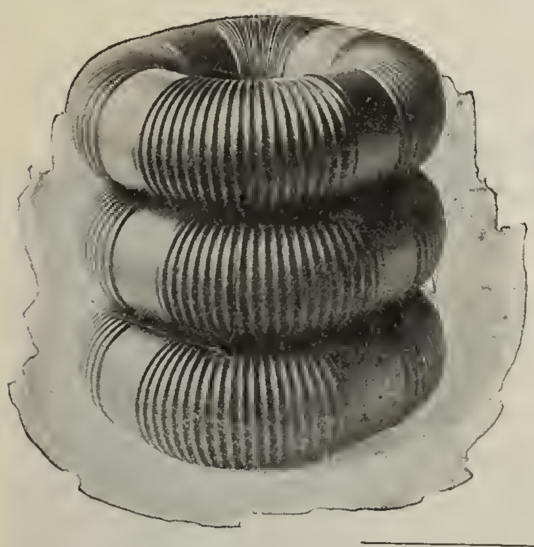

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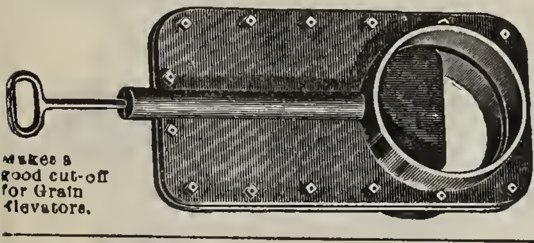

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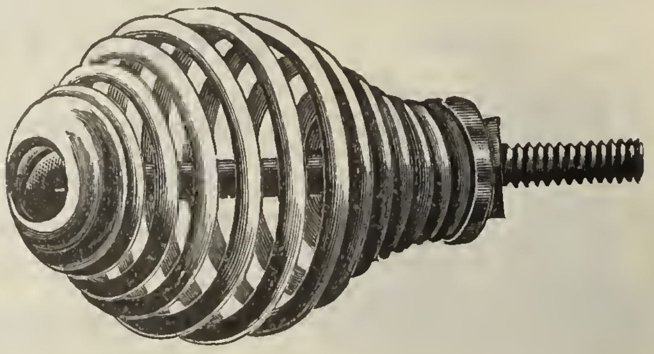

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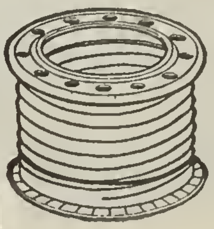

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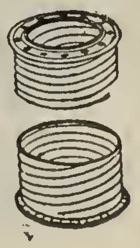

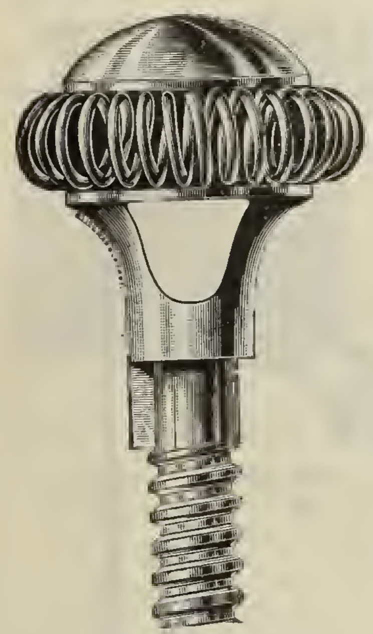

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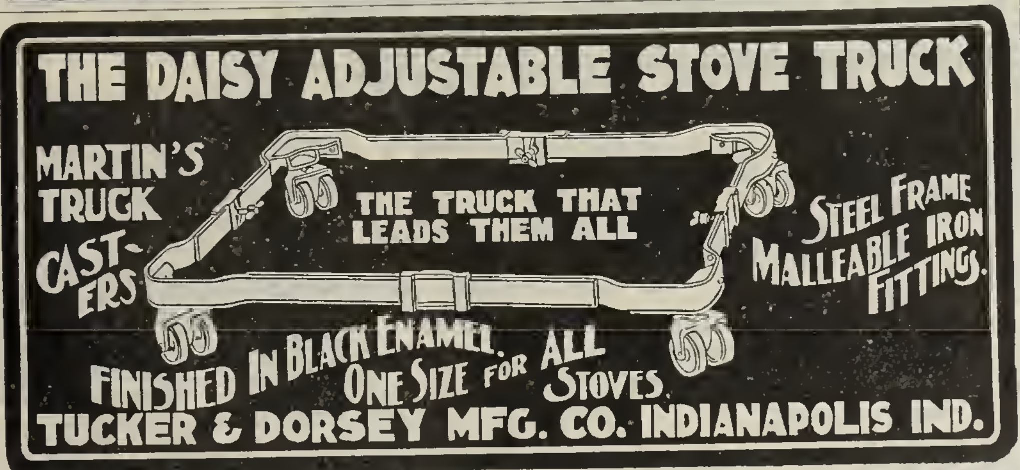

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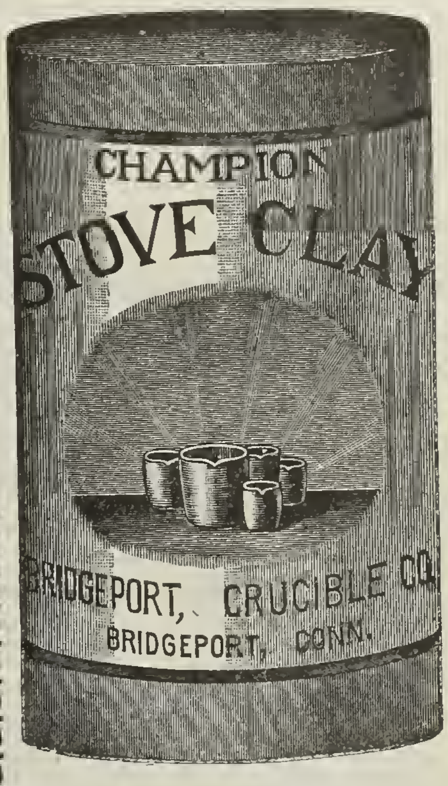

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Chapter I.—Furnaces—Is devoted to Furnace Construction—The Relative Proportion of Furnace Parts—Secondary Heating Surface—Economy and Efficiency—Heating Capacity and Exposed Wall Surface—Manufacturers' Ratings of Their Own Productions, etc.

Chapter II.—House Heating—Compares Furnaces and other apparatus, and describes Method of Setting Brick and Portable Furnaces—Location and Area of Cold Air Supply—Cold Air Rooms and Air Filters—Return Ducts and Air Circulation—Size of Hot Air Pipes—Location of Registers, etc

Chapter III.—The Combination System—Discusses Heating Distant Rooms with Radiators—Balancing the System—Location of Water Heater in Furnace—Capacity of Water Heaters—Size of Radiators, etc.

Chapter IV.—Air—Deals with the Necessity of Ventilation—Water Needed to Moisten Air—Expansion of Air—Velocity of Air in Tubes, etc.

Chapter V.—Heating and Ventilation of Buildings—Considers the Size of Furnaces Required—Fresh Air Room and Supply—Air Circulation—Size of Flues—Use of Stack Heaters—Size of Heating Coils in Vent Flues, etc.

Chapter VI.—Heating of Public Buildings, Churches and Stores—Is given to the Size of Furnaces Required—Grate Surface in Ventilated Buildings—Air Supply—Size of Heating and Ventilating Flues—Size of Stack Heater, etc.

Chapter VII.—Fan-Furnace Combination System—Is devoted to Positive Warm Currents from Fan Systems—Location of Fan and Driving Apparatus—How Good Furnaces are Aided by Fans—Types and Efficiency of Fans—Area of Ducts and Flues, etc.

Chapter VIII.—Temperature Control.

Chapter IX.—Estimate and Contract Blanks

Chapter X.—Value of Fuels. The Proper Size for Furnace Chimneys—with tables.

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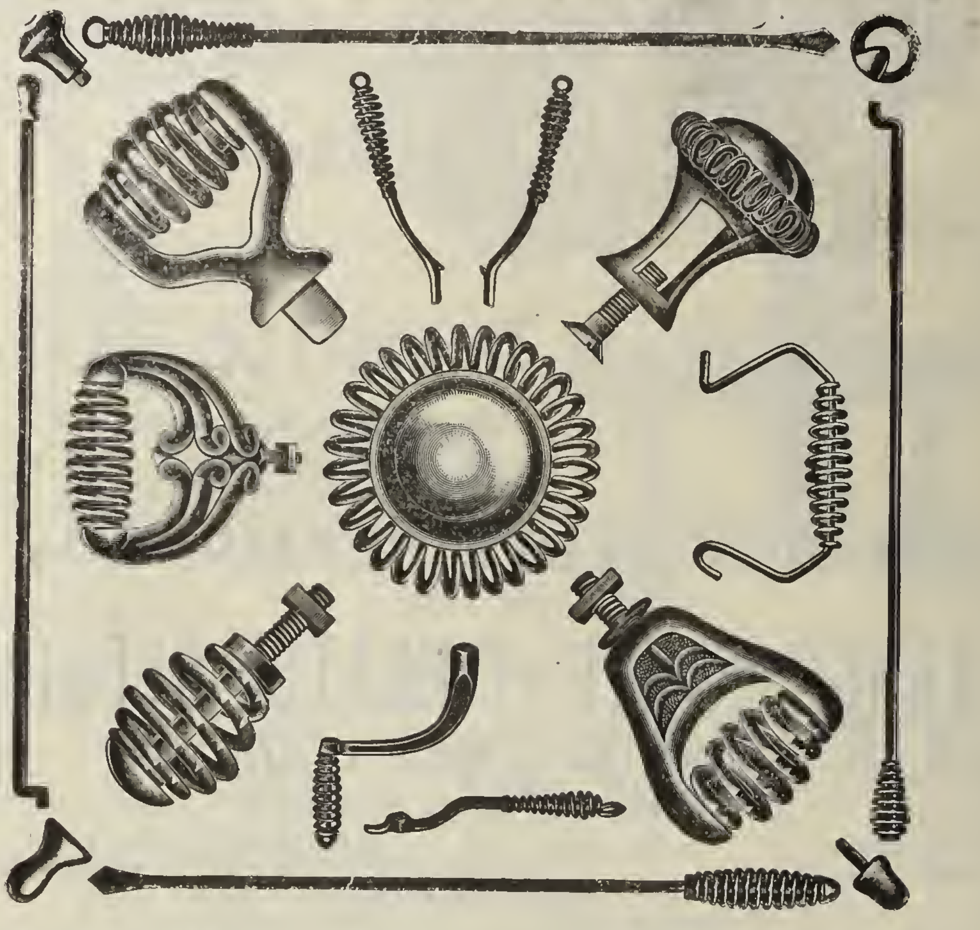

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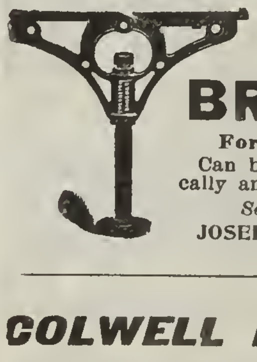

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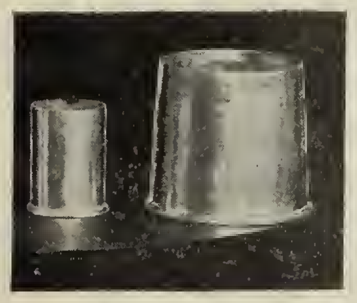

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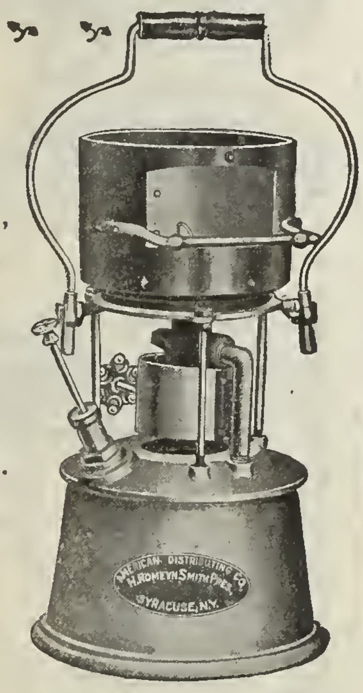
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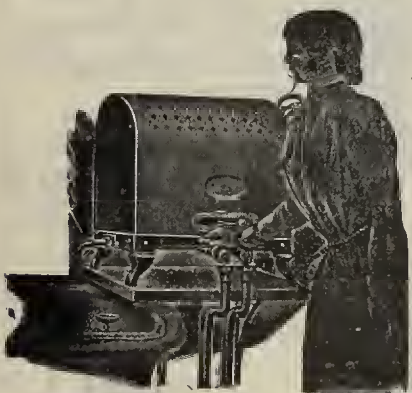

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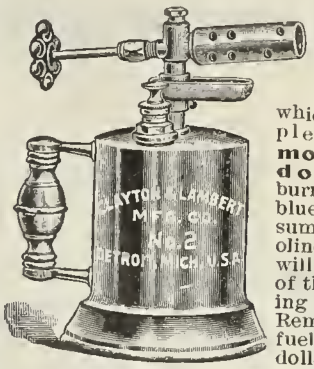
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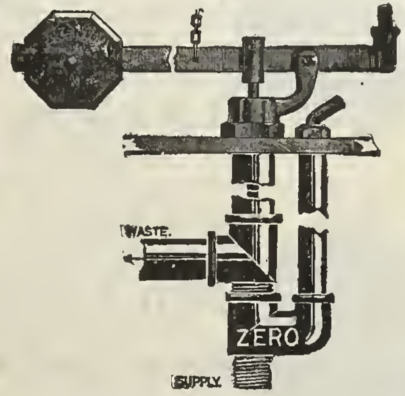

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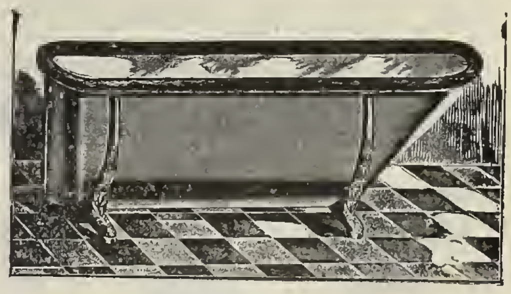

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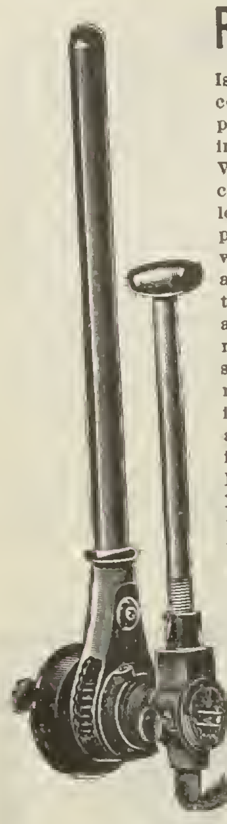

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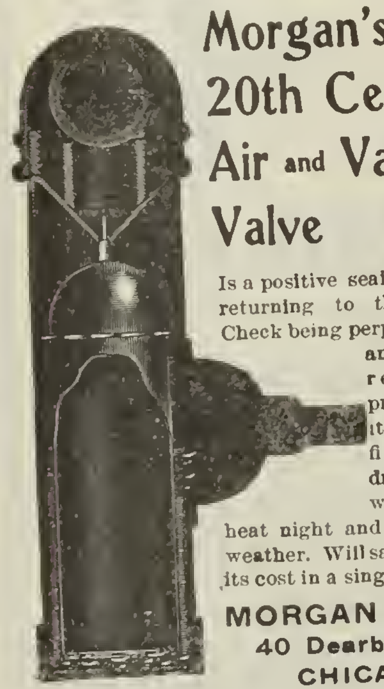

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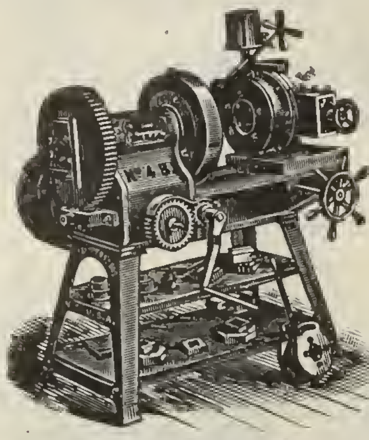

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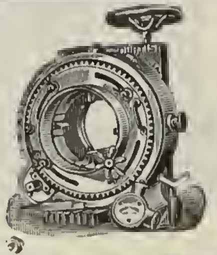

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Cut off and thread a 12-inch pipe.
Smaller sizes proportionately easy.

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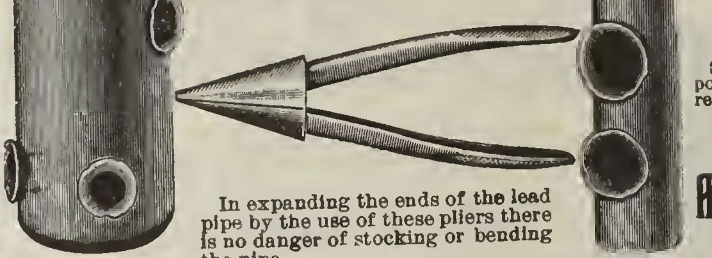

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Sample pair sent by mail to any point in the U. S., postage paid, on receipt of price.

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A New and Enlarged Edition.

The attention of readers of The Metal Worker is directed to the *fifth and enlarged edition* of Kitchen Boiler Connections, just published. Four editions of this practical book have been sold, giving apparently universal satisfaction, but with a view to presenting a more thorough treatise on the subject, and to enhance the value of the book to the Plumber, Architect and Mechanic, we have incorporated with this edition about sixty-five pages of new matter, together with over forty additional illustrations.

A Selection of Practical Letters and Articles Relating to Water Backs and Range Boilers . . . . .

These additions cover many important phases of the subject not discussed in the earlier editions, giving practical solutions of numerous other problems often met with.

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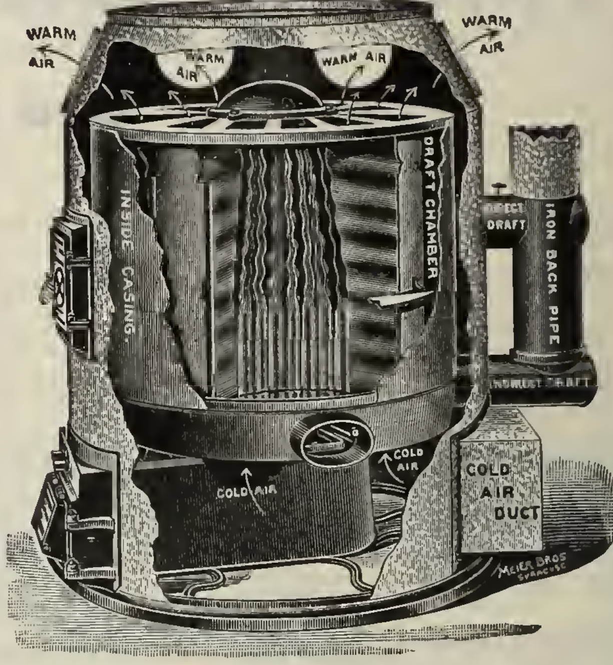

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This is accomplished by sending the air in **separate channels through** the long hollow corrugated cast iron sections which form the fire chamber.

This is a far more effective method, and the air is more thoroughly and evenly heated, than by simply **passing over** or **next to** a hot surface.

Each section has eight square feet of heating surface, and weighs about seventy pounds. There are from nine to seventeen sections in each generator, according to its size. This means a powerful and economical heater, and an abundance of pure warm air. Each section is an independent heat generator, and by capping over one or more, and extending a heat-conducting pipe therefrom, the warm air is forced through long or level pipes to the rooms so connected.

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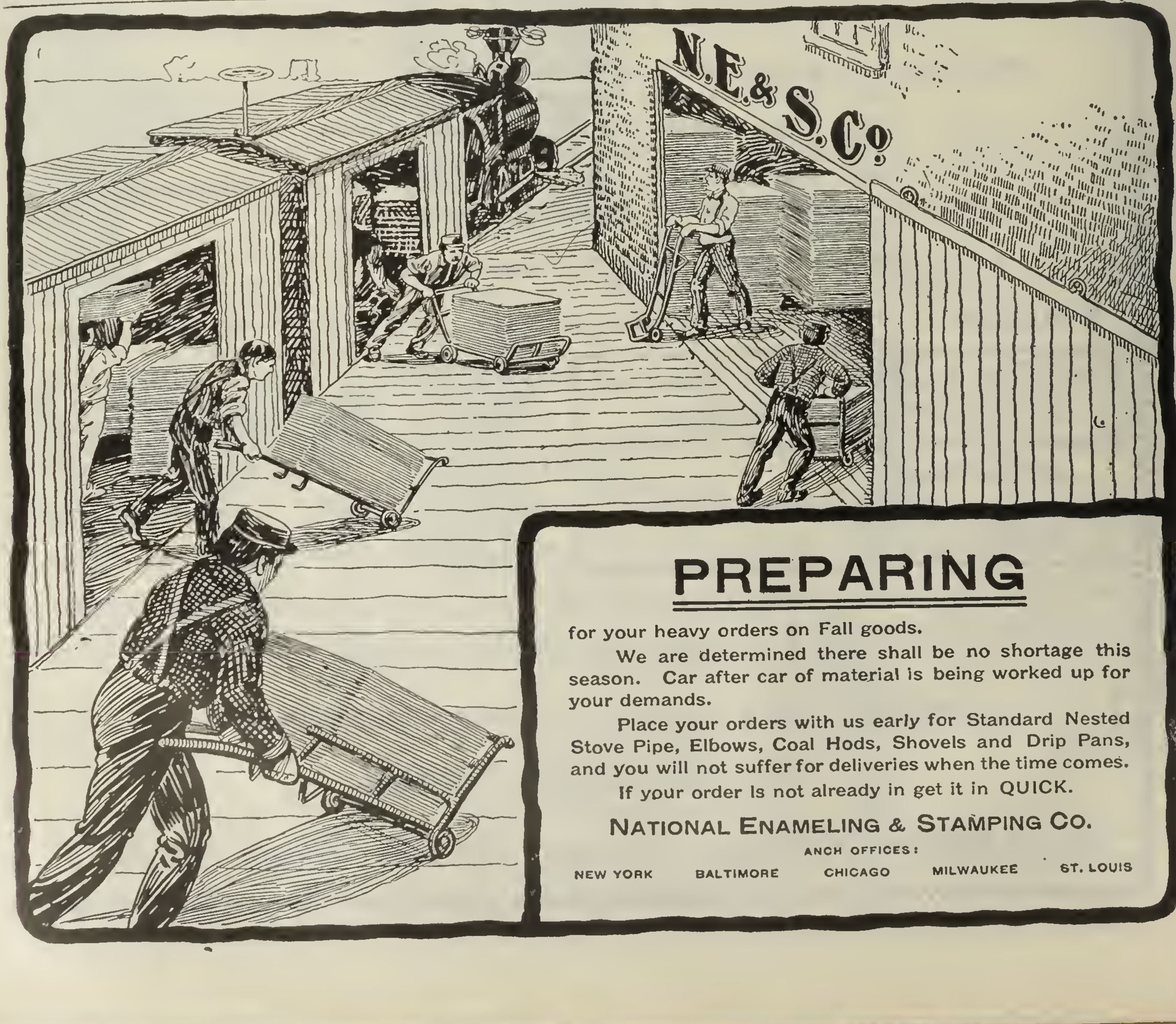

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NEW YORK AND CHICAGO.

New York, April 5, 1902.

DAVID WILLIAMS COMPANY, - - - PUBLISHERS.

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The Pittsburgh office of *The Metal Worker*, Robert A. Walker, manager, has been removed to 1201 Park Building.

A Large Spring Business.

The advent of spring finds the business interests of the United States enjoying a remarkable degree of prosperity. Not only is the volume of trade immense, but the activity is widely distributed and embraces practically all sections of the country. Reports from the various business centers are of a uniformly favorable character. Some cities report increases of as much as 25 per cent. over last year's spring trade, and payments at the principal clearing houses for the past few weeks have been considerably larger than a year ago. So great is the consumptive demand for all kinds of goods that in many instances dealers have been found unprepared for the rush of spring orders. This condition is partly attributable to the transportation delays of a few weeks back, and the trouble experienced by manufacturers in securing fuel and materials, owing to the shortage of cars. These difficulties, however, are rapidly being overcome and their effects will gradually disappear. Mills and factories generally are very busy and in many lines manufacturers are hard pushed to get out enough products to satisfy the pressing needs of their customers. Complaints of difficulty in securing prompt shipment of goods are made in various quarters, and no little inconvenience seems to be felt in some trades by reason of inability to obtain materials that are urgently needed. The unusually large volume of building now in hand in all parts of the country is calling for a vast amount of material, and there are threatenings of shortage in some lines. The iron and steel industry, which is usually regarded in the light of a business barometer, displays greater activity than at any previous time in the history of the trade, with prices moving on a reasonably remunerative level. A disposition is apparent on the part of many consumers to place contracts for far distant deliveries, indicating the fear of higher prices in the future. So far, however, no upward movement of any moment has taken place in the price of iron and steel products, and it appears to be the determined policy of the leading producers to maintain a steady market and discourage any " boom " in values. Labor controversies furnish about the only untoward factor in the business situation at the present time. Strikes and disputes have cropped up in several directions; but these troubles have lost some of their disturbing influence since the Conciliation Committee of the Civic Federation has achieved such a marked success in bringing employers and employed together and securing amicable settlements of matters in dispute. It is hoped that most of the existing labor controversies will be satisfactorily settled before they reach a serious stage. The industrial outlook presents nothing to warrant the apprehension of danger to the business interests of the country.

Natural Gas in Indiana.

The announcement that the natural gas companies of Indianapolis, and Muncie, Ind., have served notice that they will not supply natural gas for fuel purposes after October next is a further indication of the failure of the supply in the Indiana natural gas belt. For some time past the reports of the State Gas Inspector and those of the Government experts have foreshadowed the exhaustion of the supply of this fuel, and the fact that many of the larger Indiana factories, including the big mills of the American Tin Plate Company and the American Sheet Steel Company, which had been utilizing fuel gas, have abandoned its use in favor of coal shows that the day of cheap fuel in that region is rapidly passing without any prospect of a replenishment of the supply. It is said that whereas every foot of territory in the Indiana gas belt has been drawn upon, the pressure is diminishing rapidly, indicating that the supply is giving out, with the prospect of eventually ceasing altogether. This is a serious condition of things for some of the smaller industries which were established in that region entirely on the strength of the cheap fuel. Some of these enterprises have already been abandoned and others, including several glass works, will shortly remove from the district. The communities in the Indiana gas region which have been using natural gas for domestic purposes will also feel the loss of this cheap illuminating and heating agent. It is said that by next winter nearly all the users of fuel gas in the State will be forced to revert to coal, or other fuel, which will mean to them a considerable increase in expense. The failure of the natural gas supply, too, will naturally arrest to a considerable extent the industrial development of that part of the country.

Impediments to Learning Trades.

One of the institutions that is held in the highest esteem by the citizens of this country is the public educational system, which not only provides schools that the poorest may attend, but, in many instances, compels attendance at the schools and provides for a truant officer to enforce this law. No doubt this is considered by some a rather drastic measure, but it is doubtful if there is any number of well informed persons who fail to see the benefit that the country is deriving from the system. Notwithstanding this national provision for the general education of the young, a disposition is manifest on the part of many citizens who are working at trades to interpose hindrances to those ambitious youths who desire to learn some trade. The master plumbers of Lynn, Mass., recently have been invited by the journeymen to enter into an agreement which, among other provisions, would extend the term of apprenticeship to six years, and would require that those who enter the trade shall be seventeen years of age. At the present time the term of apprenticeship is but three years. Another clause of the proposed agreement is that only one apprentice shall be allowed in a shop. No objection has been raised to the time and wage clauses of the agreement, but the age of entry and term of apprenticeship and the limitation of the number of apprentices are questions of moment as to which there is a sharp difference of opinion. Already so many obstacles have been placed in the way of young men desirous of learning trades that public spirited citizens have established trade schools where, under the conditions now prevailing, the rudiments of a trade can be better learned than in the shop. The fact that many young men at the end of their apprenticeship are not competent workmen is due not so much to the shortness of the term as to the fact that under the conditions in which business is done to-day neither the employer nor his workmen spend the time in instructing the apprentices to which their service justly entitles them. Again, the higher educational training of the graduates of the public schools enables a bright, healthy boy to learn a trade in a shorter time than was possible when the old apprenticeship system was in vogue. Any attempt to hinder a young man from learning a trade and thereby preventing his becoming a useful citizen is not only a great injustice to the would-be apprentice, but also to the community to which he belongs and to the country at large. Those who are identified with such an effort doubtless feel the necessity of preventing their branch of trade from being overcrowded with workmen, with the atendant danger of a reduction of the rate of wages. The grounds for these fears, however, are hard to discover by those who are familiar with the history of the different trades, which shows that a larger number of workmen are employed and at better wages than ever before. The policy of limitation is reactionary and inconsistent with the spirit of modern progress.

The Skyscrapers of New York.

One of the most marked features of the development of modern New York is the extraordinary number of large, many-storied structures that have been springing up in the city in the past few years, taking the place of old and much smaller buildings. So many and so lofty are the skyscrapers of downtown New York that the aspect of the lower part of the city has undergone a complete change in the past ten years. Until within two or three years these tall buildings were almost wholly confined to the lower business section of Manhattan Island, but they are gradually creeping further and further uptown, until now many skyscraping apartment houses stand sharply out on the sky line even above Central Park. The past year witnessed a remarkable development in this class of building. Fully a score of great office and business buildings were erected or begun below Fourteenth street, representing an invested capital of about $40,000,000. A remarkable thing about these business skyscrapers is that, although they provide accommodation for many times the number of tenants that were housed in the buildings they have displaced, they quickly fill up. No sooner is one of the big new office structures completed than its myriad rooms are occupied. Yet the older office buildings do not seem to be deserted. The explanation, no doubt, lies in the fact that New York City is year by year becoming more completely recognized as the commercial and financial center of the country. Commercial and industrial institutions and companies in all parts of the country are establishing agencies or branch offices in the metropolis. Most of the great consolidations formed within the last few years have also established their headquarters in the city, and some of them are occupying whole floors in the modern skyscrapers. With these have come a crowd of smaller concerns who find it desirable to be at the center of the business nerve system of the country. As a matter of fact, real estate agents say that the demand for office accommodations in downtown New York at the present time is greater than the supply, notwithstanding the enormous increase that has been provided of late years in the new skyscrapers. There is claimed to be a long waiting list of applicants for offices in all of the best office buildings. These buildings are evidently favorably regarded as investments, and it is said that notwithstanding the vast sums of money that are put into their construction, furnishing and equipment, most of the big modern business structures of New York are yielding large and steady profits to their proprietors.

The manufacturers of the country are now importing more than a million dollars' worth of materials for their workshops every day in the year, and are exporting more than a million dollars' worth of their finished product each day. The imports of manufacturers' materials in the eight months ending with February 28, 1902, according to a statement just issued by the Treasury Bureau of Statistics, were $270,202,774 in value, and the exports of finished manufactures during the same period were $257,907,430. Thus, in 243 days of the fiscal year, the manufacturers have imported $270,000,000 worth of material and exported $257,000,000 worth of their finished product, thus averaging more than $1,000,000 of imports and exports combined for every day of the fiscal year up to the beginning of last month. The importation of manufacturers' materials was far greater in the first eight months of the current fiscal year than in the corresponding period of any preceding year, while the exports of manufactured goods was only exceeded in the two eight monthly periods immediately preceding, and that but slightly.

A conference looking to more harmonious relations between employers and workmen took place in England lately, the parties being the Employers' Federation and three of the leading unions, but the stipulations proposed by the Employers' Federation were promptly rejected by the workmen. The proposition made to them was that the employers should not be interfered with in the management of their business in any way; removal of all restrictions as to output and piece work, and no objections made as to the number of apprentices or the employment of nonunion men. The employers, for their part, agreed not to black list any because they belonged to unions, or to institute piece work prices which would be less than the recognized trade union rates. These conditions seem easily complied with by both sides, but the men rejected them by a vote of two to one.

Senator Hanna, chairman of the Conciliation Committee of the National Civic Federation, has appointed the following as members of the committee: Marcus A. Hanna, Samuel Gompers, Oscar S. Straus, Charles A. Moore, R. M. Easley, Archbishop Ireland, Bishop Potter, Franklin MacVeagh, John Mitchell, Frank P. Sargent, James Duncan, J. Kruttschnitt, Marcus M. Marks, William H. Pfahler. By a resolution passed at a former meeting of the Federation, this committee is vested with power to proceed to settle labor disputes and bring about various proposed industrial reforms.

The Compulsory Industrial Arbitration Court, whose membership includes representatives of employers and employees, which was recently established in Australia, will open this month. Its operation will be watched with interest.

ADVANCE IN MOLDERS' WAGES.

Another advance in the price of stoves is to be expected as a result of the new agreement made at Chicago last week between representatives of the Stove Founders' National Defense Association and a committee of the Iron Molders' Union of North America. The conference was held at the Auditorium Hotel on March 28 and 29. The molders' committee asked for an advance of 10 per cent., as had been expected, but after the matter had been thoroughly discussed and the conditions of the trade were fully set forth by the manufacturers an agreement was reached which provides for an advance of 5 per cent., which went into effect on the 1st inst. and will continue in force for one year from that date.

The demand for an advance of 10 per cent. was based not only on the general prosperity now existing throughout the country, but also on the ground that the cost of living had considerably increased during the year, and workmen should, therefore, receive greater compensation. In behalf of the manufacturers the facts were pointed out that since 1898 the wages of molders had been advanced twice, one advance being 10 per cent. and another 5 per cent. The increase in wages, however, has been greater than indicated by these figures. During the past four or five years adjustments in board prices on new goods have been made in various districts of the country, and the piece prices received by molders have been almost invariably advanced. On this basis the wages received by molders the past year have represented from 20 to 25 per cent. more than the wages ruling in 1898. The additional advance of 5 per cent. just granted will bring molders' wages up to about 30 per cent. above the basis of 1898. It was further pointed out that as stove molders' wages had not been reduced during the depression existing from 1893 to 1898, the advances made since then have been based on a higher level of wages than in other trades in which reductions were made during that depression. These arguments were convincing to the molders' committee and were effective in causing them to modify their demand.

The agreement which has been made assures to the stove trade a continuance of peaceful relations with molders during the coming year. While all the stove manufacturers are not members of the Stove Founders' National Defense Association, the wages which are established by this association are accepted in all the other stove foundries, so that the new rate may be said to be effective throughout the country. It is not expected that the manufacturers will pay the higher rate of wages without endeavoring to reimburse themselves by asking a higher price for their stoves, especially as the cost of materials is steadily advancing.

THE ANNUAL CONVENTIONS OF STOVE MANUFACTURERS.

Secretary Thomas J. Hogan of the Stove Founders' National Defense Association and of the National Association of Stove Manufacturers is busily engaged at the headquarters in Chicago preparing and getting out circulars calling for the annual conventions of these bodies, to be held in New York City next month. The seventeenth annual meeting of the Stove Founders' National Defense Association will be held at the Waldorf-Astoria on Tuesday, May 13. The thirty-first annual meeting of the National Association of Stove Manufacturers will take place at same hotel on Wednesday and Thursday, May 14 and 15. This is in accordance with the constitution, which provides that the annual meeting shall be held on the second Wednesday in May, which makes the meeting quite late this year. There are many things that will make this year's meeting of special interest. As the hospitality dispensed in New York has always been appreciated, this fact, taken in connection with the natural attractions of a visit to the Empire City, is expected to draw a large attendance to the conventions.

Combined Hot Blast and Smoke Consumer.

John D. Ehrlich, proprietor of the Indianapolis Artistic Pattern Works of Indianapolis, Ind., has recently secured letters patent on a combined hot blast and smoke consumer for ranges and cook stoves, embodying a number of interesting features. The results obtained by Mr. Ehrlich consist in procuring air through ingress bowls, which are secured to and located near the rear of the top of the range or stove, conveying the air through a specially constructed pipe to the fire pot and thence discharging it through semicircular slots over the point of combustion. The object is to heat the air before it is discharged, thus effecting a more perfect ignition and combustion of the gases which arise from the fire. We understand that the device can be added to any stove or range, and that a greater number of units of heat are procured from the same amount of fuel consumed under present methods, while the relative ratio of radiation is correspondingly increased. Another point to which Mr. Ehrlich calls special attention, and one which is likely to be highly appreciated by the public, is that the use of the device eliminates the necessity of building a fire every morning, as the stove or range equipped with the hot blast will readily maintain a fire over night.

The Excelsior Elbows.

The Excelsior Steel Furnace Company, 38 and 40 West Monroe street, Chicago, have issued an illustrated circular describing a few of the various kinds of elbows which they manufacture. The illustrations given comprise the Excelsior Parlor elbow, adjustable elbow, long end elbow, extra long end elbow and short end elbow. These elbows are made in all sizes and materials, both adjustable and stationary. The joints of the adjustable elbows are oiled during the process of manufacture, thus insuring ready adjustment at all times, but the oiling does not prevent the elbows from being easily blackened. They are made by special machinery, all being perfect and having no projecting seams to mash down in shipping. These adjustable elbows are made up to 48 inches in diameter, and with 2-inch and 4-inch slips. The Excelsior Parlor elbows are finely constructed and finished, are oiled automatically, enabling them to be carried in stock any length of time without injury, and are made with rivets in the throat or with rivets in the back, so that a finished appearance is always presented. In shipping, one-half are furnished with rivets in the throat and one-half with rivets in the back. The stationary elbows are made with 1¼ and 2 inch slips.

"Just a Cook Book."

Under the above title, George M. Clark & Co., Chicago, have issued a handsomely printed and very attractive and valuable publication of some 50 pages, bound in a paper cover, bearing an appropriate illustration in colors. This little volume contains a large number of tried recipes for making all sorts of dishes and dainties. It does not aim to be a complete manual of cooking, but, as stated in the preface, "the recipes are all practical ones for people who live well and like to have appetizing dishes on their tables. They were collected originally for publication in a cook book issued by the women of a church in an attractive suburb, and are the recipes of good housekeepers, people who owned their own homes, had a welcome always for friends and worthy strangers and sometimes 'entertained angels unawares.'" The book contains illustrations of Jewel gas ranges, which are so inserted that they do not obtrude themselves as advertising matter. The book will undoubtedly be highly appreciated by all who may be so fortunate as to secure a copy. The contents were compiled by Henry M. Hubbard, secretary of the company, whose literary attainments have enabled him to make the book of more than ordinary interest.

The Kansas City Furnace Company of Kansas City, Mo., have been incorporated with a capital of $15,000, by Edward L. Salmon, Benjamin F. Thompson, William T. Jamison and others.

Modern Furnace Heating.

A Combination Hot Air and Hot Water Heating and Ventilating System.

It has been noticeable in the past two or three years that the furnace system of heating has been used for warming a far greater portion than its natural share of the fine residences which have been erected throughout the country. This has been reflected not only in the inquiry on the part of architects and their clients, but also in the increased sales of the best grades of furnaces by furnace manufacturers generally. The furnace system of heating has long been established in the favor of those who appreciate the value of continual change of air and notwithstanding the difficulties which in some instances attend the heating of distant rooms. It is recognized that furnaces work better wherever some means is provided to exhaust the air in the building and allow for the unhindered inflow of a volume of fresh warm air.

After considering the different methods of heating used in fine residences, A. O. Sherman selected a combination furnace and ventilating system for East Cliff, his residence at Rye, N. Y., erected from plans designed by his architect, F. A. Rooke, 489 Fifth avenue, New York. East Cliff stands on a bluff on the shore of Long Island Sound, exposed on all sides, as shown in Fig. 1, requiring in winter weather apparatus of ample capacity for providing a comfortable temperature.

THE APPARATUS.

The apparatus selected for the heating was two No. 260 Thatcher tubular hot air and hot water heaters, made by the Thatcher Furnace Company of 240 Water street, New York City. They were installed in accordance with plans made by William Miller, one of their furnace heating engineers. A feature of the system is the use of the Miller patented system of exhaust ventilation in connection with the furnaces. The work was done by George Siltz of Port Chester, N. Y. The plan of the first floor of the house is presented in Fig. 2, and the work of the heaters is increased from the fact that the second floor, shown in Fig. 3, extends over the large porch running along the entire southeast side of the house. In addition to heating these two floors the servants' rooms on the third floor are warmed from a register placed in the rear hall, as shown in Fig. 4, which is a plan of the third floor. A bathroom on this floor is heated from the same pipe which heats the store room below, and a pipe also leads to a large room that is used for a play room. The location of the combination heaters is shown in Fig. 5, which is a plan of the basement.

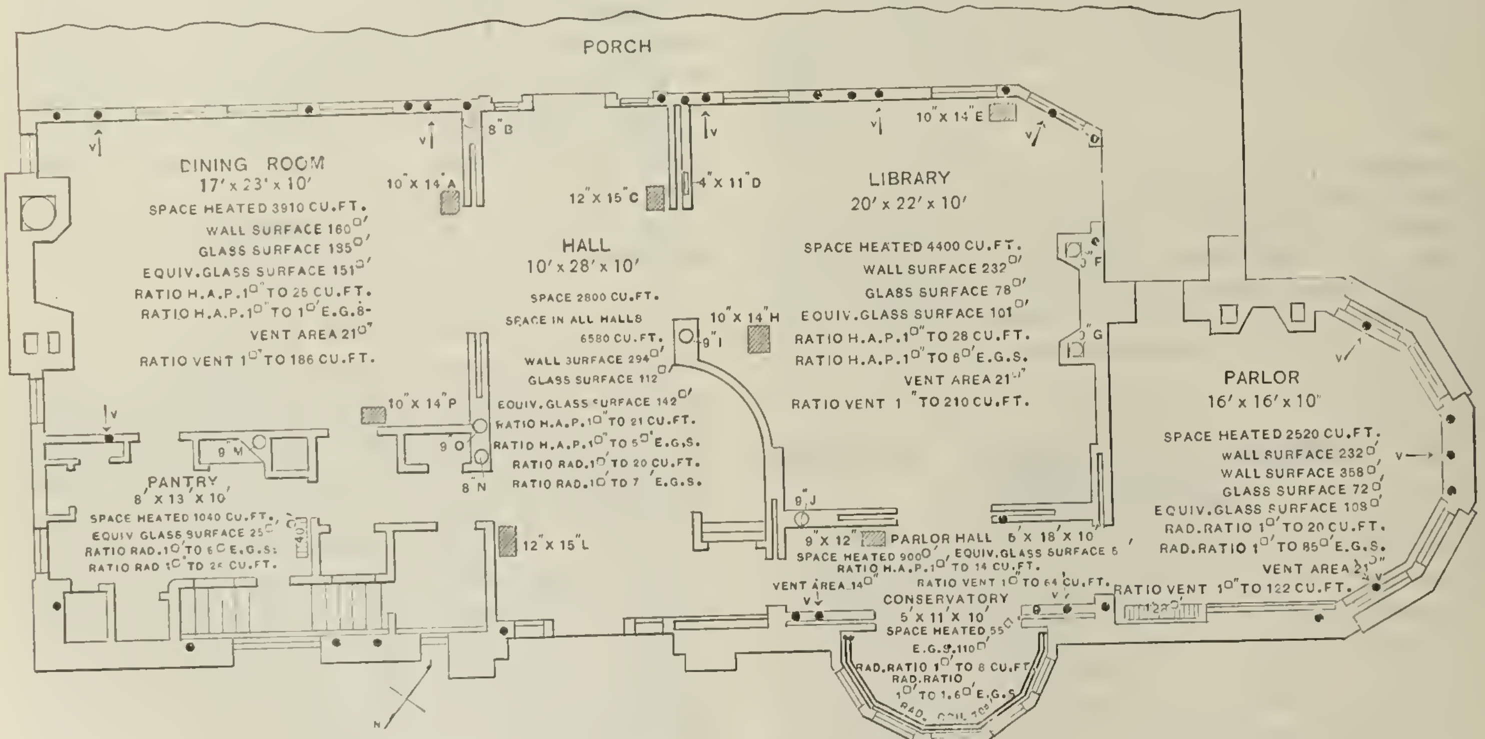
PORCH
DINING ROOM
17'x23'x10'
SPACE HEATED 3910 CU.FT.
WALL SURFACE 160□'
GLASS SURFACE 135□'
EQUIV.GLASS SURFACE 151□'
RATIO H.A.P.1□" TO 25 CU.FT.
RATIO H.A.P.1□" TO 1□'E.G.S.
VENT AREA 21□"
RATIO VENT 1□" TO 186 CU.FT.
10"x14"A
8"B
12"x15"C
4"x11"D
10"x14"E
F
G
10"x14"H
9"I
9"J
9"M
8"N
9"O
10"x14"P
12"x15"L
HALL
10'x28'x10'
SPACE 2800 CU.FT.
SPACE IN ALL HALLS 6580 CU.FT.
WALL SURFACE 294□'
GLASS SURFACE 112□'
EQUIV.GLASS SURFACE 142□'
RATIO H.A.P.1□" TO 21 CU.FT.
RATIO H.A.P.1□" TO 5□'E.G.S.
RATIO RAD.1□' TO 20 CU.FT.
RATIO RAD.1□' TO 7 'E.G.S.
PANTRY
8'x13'x10'
SPACE HEATED 1040 CU.FT.
EQUIV GLASS SURFACE 25□'
RATIO RAD.1□' TO 6□'E.G.S.
RATIO RAD 1□' TO 26 CU.FT.
LIBRARY
20'x22'x10'
SPACE HEATED 4400 CU.FT.
WALL SURFACE 232□'
GLASS SURFACE 78□'
EQUIV.GLASS SURFACE 101□'
RATIO H.A.P.1□" TO 28 CU.FT.
RATIO H.A.P.1□" TO 8□'E.G.S.
VENT AREA 21□"
RATIO VENT 1□" TO 210 CU.FT.
PARLOR
16'x16'x10'
SPACE HEATED 2520 CU.FT.
WALL SURFACE 232□'
WALL SURFACE 358□'
GLASS SURFACE 72□'
EQUIV.GLASS SURFACE 108□'
RAD.RATIO 1□' TO 20 CU.FT.
RAD.RATIO 1□' TO 85□'E.G.S.
VENT AREA 21□"
RATIO VENT 1□" TO 122 CU.FT.
9"x12" PARLOR HALL 6'x18'x10'
SPACE HEATED 900□', EQUIV.GLASS SURFACE 6
RATIO H.A.P.1□" TO 14 CU.FT.
RATIO VENT 1□" TO 64 CU.FT.
VENT AREA 14□"
CONSERVATORY
5'x11'x10'
SPACE HEATED 55□'
E.G.S.110□'
RAD.RATIO 1□' TO 8 CU.FT.
RAD.RATIO 1□' TO 1.6□'E.G.S.
V
N

Fig. 2.—Plan of First Floor.

This plan also shows the location and run of the cold air supply pipes which lead from the northwest side of the building. The furnaces are supplied independently of each other, galvanized iron ducts leading from the windows down through mason work trenches running under the cellar floor to the pits under the furnaces. In the vertical portion of the ducts dampers are placed for controlling the fresh air supply, and so arranged that the supply from out of doors can be shut off and the air supply taken from the basement in case of high winds. The openings are sufficiently large to allow the ducts to be entered for cleaning, the ducts being 16 x 36 inches in size.

Modern Furnace Heating.—A Combination Hot Air and Hot Water Heating and Ventilating System.—Fig. 1.—View of East Cliff.

TWIN FURNACE CONNECTION.

The furnaces are set in a battery with twin connection, a feature of which is the construction of the top. From the rim, which fits on the oval casing ring, the top pitches both ways, as shown in Fig. 6. Instead of the casings of the furnaces, which are 60 inches in diameter, continuing to the top all around, they are cut down on the sides for a distance of about 2 feet. This is done for the purpose of allowing the air from one furnace to readily flow over and fill the pipes over the other furnace, when the second furnace has no fire in it. The pitch of the top is also given such an angle as is best calculated to deflect a portion of the air rising through the furnace, so as to insure a distribution of the hot air through all of the furnace pipes.

The run of the furnace pipes is clearly shown in the basement plan, and by reference to the other plans it will be noted that while a number of the pipes lead to registers on the second floor, round pipes are used in all instances except where a 4 x 11 inch flue leads to a small room directly over the warm apartments below. It will also be noted that in several instances, after the hot air pipe reaches the floor, it runs over under the floor to a register located in accordance with the requirements of the furniture, and it is pointed out as of special interest that warm air flows freely from the registers connected with these pipes.

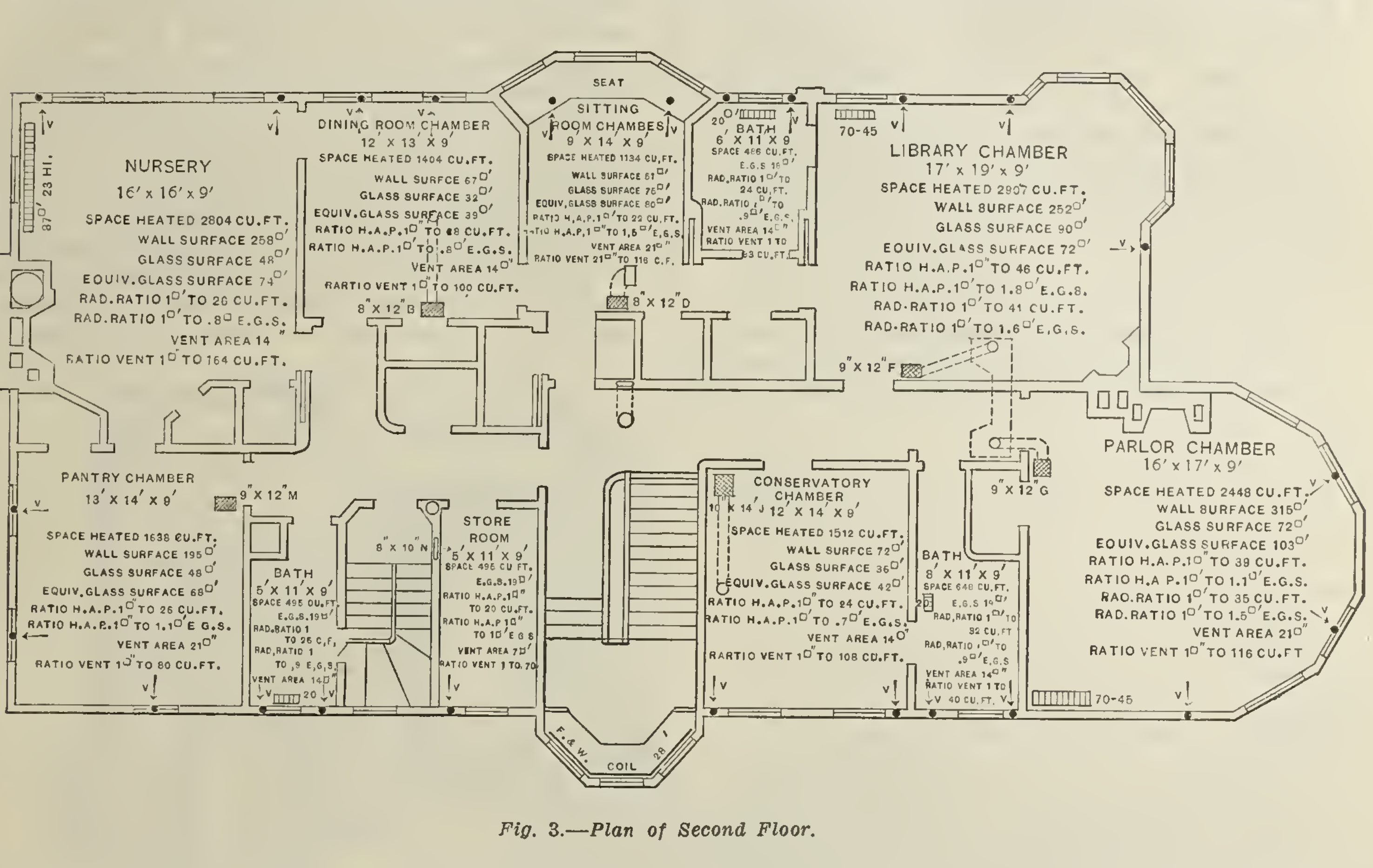

Fig. 3.—Plan of Second Floor.

THE VENTILATING SYSTEM.

The free flow of air noticed at the registers is due to no small extent to another interesting feature of this heating plant, which is the Miller patent exhaust ventilating system. On the first and second floor plans arrows marked V indicate the location of exhaust ventilating registers. There are small face plates placed in the base boards connected with 3-inch pipes. The location of the vent pipes, as indicated on the outer walls, is for the purpose of carrying away the foul air and the cooler air, which falls along the cold walls and which would otherwise have the effect of chilling the atmosphere in the rooms. The 3-inch pipes run from the first and second floors to the main exhaust pipes in the basement, which run to the furnaces and connect with the exhaust drum which envelops the smoke pipe, the full strength of the draft of the chimney acting as an exhaust on these vent ducts by means of the Miller exhaust ventilating devices. The operation may be readily understood from the illustrations given in Fig. 7. Dampers are so arranged that when a strong fire is needed the air returning through the vent connections passes through the ash pit and up through the fire to supply the draft. When it is desired to check the fire the damper to the ash pit supply is closed and the check damper on the smoke pipe

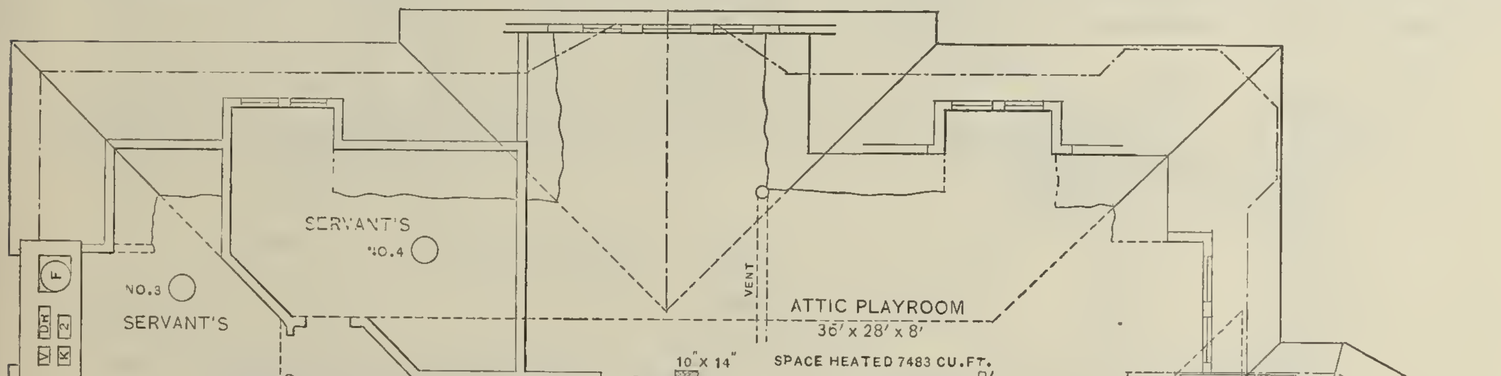

Fig. 4.—Plan of Third Floor.

is opened, so that the air drawn from the rooms through the exhaust system enters the smoke pipe direct and passes to the chimney.

The furnaces each have a 9-inch smoke connection leading into a 20-inch drum, from which a 16-inch pipe leads over to a 24-inch tiled flue. This smoke and vent pipe from each of the furnaces runs independently to the flue, where a Y is used to connect them with the flue in such a way as to reduce the friction in making the connection, and the upward turn is so made that the full strength of the draft of the warm 24-inch flue is utilized, not only for carrying off the smoke and exhausting the foul air from the building to improve the atmosphere, but also to facilitate the inflow of warm air from the furnaces to the different rooms to facilitate the heating.

THE HOT WATER SYSTEM.

Another feature of the heating plant is the hot water section. Each of the furnaces is supplied with a hot water heater exposing about 18 square feet of surface to the fire. The water heater consists of an annular ring which forms the upper part of the fire pot, so that the heat of the burning fuel comes in contact with this portion. Openings are arranged in it for the return pipe from the water heating system. Openings are also provided at four places for 2-inch pipes to lead from this ring to the water heating dome and suspended in the upper part of the combustion chamber. This water heater is so designed and arranged as to offer as little interference as possible in attending the fire and also to detract as little as possible from the air heating efficiency of the furnace. A flow pipe 3-inches in diameter leads up through the top of the furnaces from each of these water heaters to a 3½-inch pipe, from which a 2 and a 3 inch branch runs to supply the risers to the different radiators, as shown on the basement plan. These radiators are placed in the most distant and exposed rooms, and in some instances both radiators and hot air registers are provided for heating them.

A coil of 1¼-inch pipe is used for heating the conservatory, and in the bow window at the landing to the upper floor hall Fowler & Wolfe wall radiators are used to secure a more ornamental effect. An expansion tank, arranged to circulate and provided with an overflow, is located in the bathroom on the third floor.

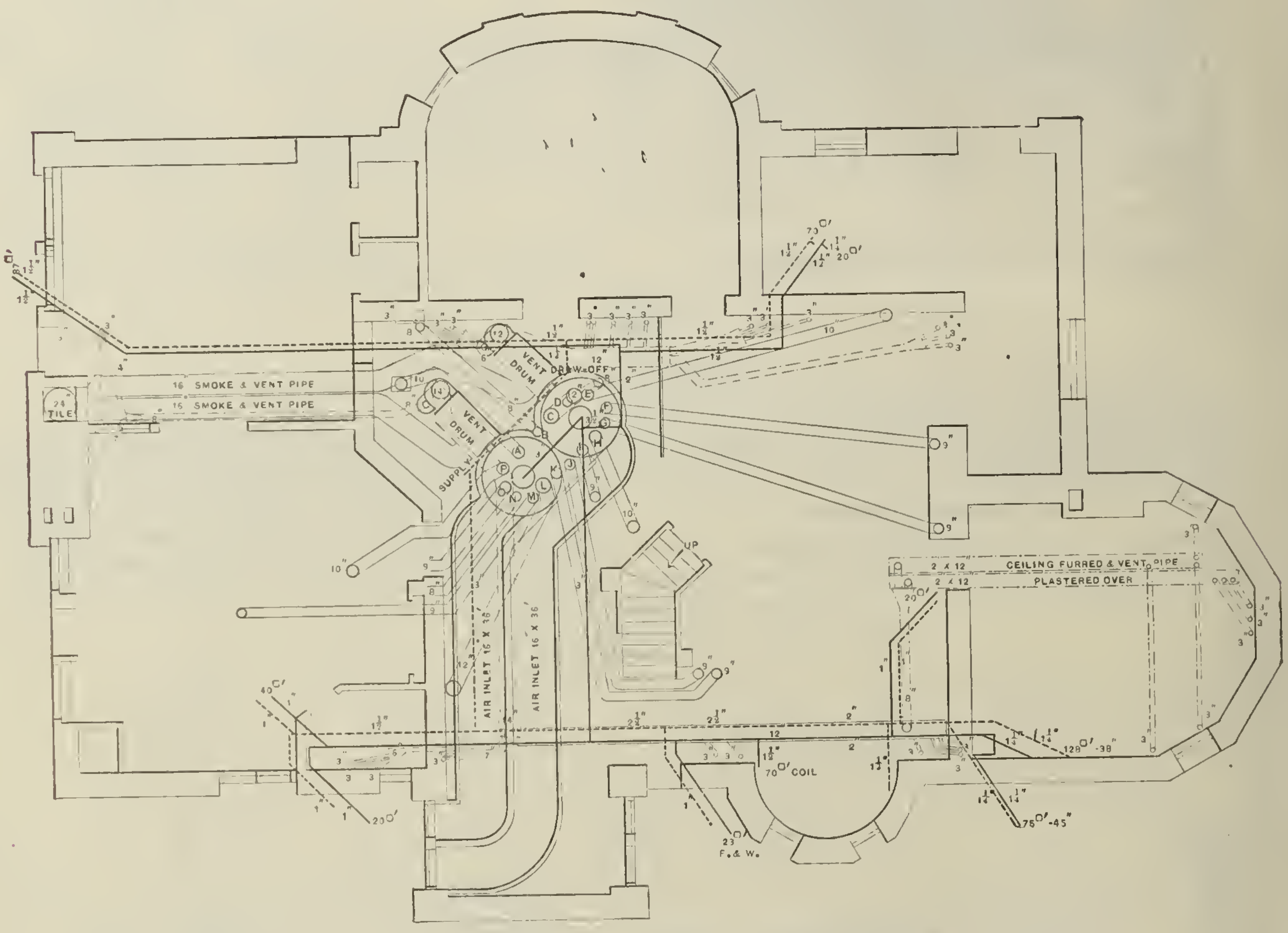

Fig. 5.—Plan of Basement, Showing Hot Air and Hot Water Piping and Ventilating Pipes.

THE DATA ON THE PLANS.

For the convenience of those who wish to study the proportions between the different parts of the system the floor plans give the dimensions of the different rooms, the space heated, the wall surface, glass surface, equivalent glass surface and the ratio between 1 square inch of area in the hot air pipe and 1 square foot of surface in the radiator to the space heated, and to the equivalent glass surface. They also give the area of the vent pipes leading from the different rooms. This will enable a more correct idea to be formed of the relation that the various parts of the system bear to each other.

In calculating the equivalent glass surface it is assumed that an expanse of 10 square feet of wall surface has the same cooling effect as 1 square foot of glass surface.*

It will be noticed that generous provision has been made for heating, as will always be the case in first-class work. Many will be of the opinion that the apparatus is larger than is needed for the work, but owing to the exposure it is commendable judgment that has been used in taking absolutely no risk in providing apparatus to maintain a comfortable temperature under all conditions of weather and outside temperature.

It is also interesting in the study of this plant to know that it has been thoroughly tested during the coldest weather of the winters of 1901 and 1902 operating perfectly in every detail and demonstrating that in the milder weather of spring and fall it is not necessary to fire both furnaces. A test of the plant with fire in operation in only one furnace has shown a circulation of hot water in all of the radiators and a flow of hot air from all of the registers, and an outflow of all cold air from every ventilating register in every room in the house.

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* For the sake of convenience only, when this article was prepared, 10 square feet of wall surface was calculated as equivalent in cooling effect to 1 square foot of glass, while 4 square feet of wall surface is the equivalent generally considered in the heating trades. This explanation is made to prevent errors and misunderstandings.

THE RELATIVE PROPORTIONS OF THE SYSTEM.

For a further study of this plant the following figures have been prepared. The furnaces have a 60-inch casing lined with asbestos and provided with a corrugated shield of bright tin. The construction is such that the space through which the air must flow in being heated at the most restricted point provides an area of 1237 square inches, while the combined areas of the 16 hot air pipes leading from the furnace aggregates 1129 square inches. The cold air supply ducts have an area of 576 inches, or a total of 1152 square inches.

The construction of the furnaces provides for a large expanse of heating surface and for the indirect passage of the gases through the furnace before they find their final outlet in the smoke pipe. The heating surface in each furnace amounts to 100 square feet. The fire pot is provided with extended surface in the form of pins ¾ inch in diameter and 2½ inches long, sufficient in number to expose a surface of more than 4 square feet. There are 15 tubes 4½ x 16 inches leading through the combustion chamber at a point where the direct radiation from the hot fire is upon them and the gases in passing to the annular radiator must circulate around them. These tubes present a surface of more than 23 square feet, while that exposed by the combustion chamber dome and the top return flue radiator make a total of 100 square feet of surface in each furnace. The grate in each furnace is 29 inches in diameter, having an area of 660 square inches, or 4.6 square feet.

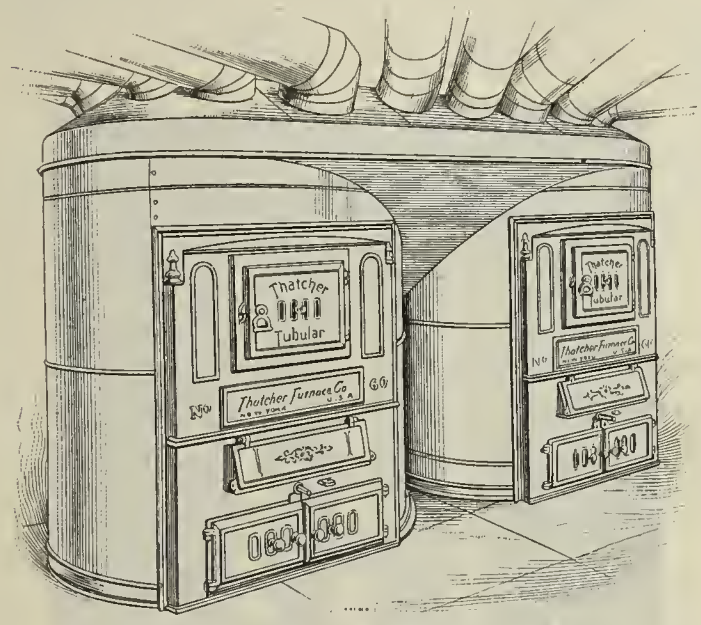


Fig. 6.—The Twin Furnace Connection.

THE AMOUNT OF HEATING DONE.

The space heated in the building, including the servants' rooms on the third floor heated from the hall, amounts to 45,349 cubic feet, having a wall surface of 3462 square feet, a glass surface of 1176 square feet, and an equivalent glass surface of 1702 square feet. When both furnaces are running the grate area bears a proportion to the work done of 1 square foot of surface to 10.8 square feet of heating surface in the furnace, and 5038 cubic feet of space heated, and to 185 square feet of equivalent glass surface. In square inches the grate bears a proportion of 1 to 34.3 cubic feet of space heated and to 1.3 square feet of equivalent glass surface. When only one furnace is in use the grate bears a proportion of 1 square foot to 10,076 cubic feet of space heated and 370 square feet of equivalent glass surface, and in square inches a proportion of 1 square inch to 64.6 cubic feet of space heated and to 2.6 square feet of equivalent glass surface. Each of the furnaces presents in the fire pot, tubes and radiators 100 square feet of surface and the grate bears a relation to this surface of 1 square foot to 10.8 square feet.

THE HOT WATER SYSTEM PROPORTIONS.

The furnaces are both provided with a water heater exposing about 18 square feet of surface and showing a proportion of 1 square foot of grate surface to about 4 square feet of heating surface. For heating the building there are 10 radiators, having a total surface of 553 feet. When both furnaces are running the grate surface will bear a proportion of 1 square foot to 60 square feet of radiating surface. With both furnaces 36 square feet of surface in the two water heaters bear a relation of 1 square foot to 15 square feet of radiating surface. When but one heater is used the proportion is 1 to 30. When one furnace is used the surface in the water heater bears a proportion of 1 square foot to 614 cubic feet of space and to 32 square feet of equivalent glass surface. When both furnaces are used the proportion is 1 square foot to 307 cubic feet of space and to 64 square feet of equivalent glass surface.

In order to show the proportions existing in the work done by both the air heating and water heating sections of the system it is estimated that each square foot of surface in the radiators heats 20 cubic feet of space, making a total of 11,060 cubic feet of space, and on the same basis of calculation the water heating section takes care of 574 square feet of equivalent glass surface, or a proportion of 1 square foot of radiating surface to a little more than 1 square foot of equivalent glass surface.

THE HOT AIR SYSTEM PROPORTIONS.

When both furnaces are used the heating surface exposed for heating air amounts to 200 square feet, and bears a proportion to the space heated with hot air, which is 34,289 cubic feet, of 1 square foot to 171 cubic feet of space and to 5.6 square feet of equivalent glass surface.

When but one furnace is in use the heating surface bears a proportion of 1 square foot to 342 cubic feet of space heated and to 11.2 square feet of equivalent glass surface. The combined area of the 16 hot air pipes of the various sizes shown on the plans is 1129 square inches, slightly less than the combined area of the two cold air supply ducts, which are 16 x 36 inches in size, having an area of 576 inches each and a total area of 1152 square inches. The hot air pipes leading from the furnaces are all marked with a letter, and at the registers in the different rooms is a letter showing which hot air pipe on the furnace supplies the register in that room. The relation of the hot air pipe area to the 34,289 cubic feet in that portion of the building which is heated with hot air is 1 square inch to 30 cubic feet of space and to 1 square foot of equivalent glass surface.

THE VENTILATION SYSTEM PROPORTIONS.

There are 35 3-inch vent pipes leading from the different rooms in the building. Each pipe has an area of 7.07 square inches, making a total of 247 square inches of area in the small exhaust ducts, which bears a relation of 1 square inch to 183 cubic feet of space. It will be noticed that the area of the exhaust ducts invariably increases over that needed to equal the small ducts connected with them, and in consequence a much stronger exhaust is effected through the 3-inch pipes than would otherwise be gained. Wherever it has been possible the exhaust ducts are round in shape, but in two instances it has been necessary to run the exhaust ducts for a portion of their length between the joists, where a rectangular pipe has been used.

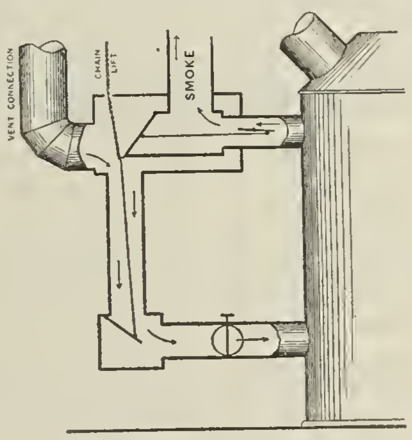


Fig. 7.—The Miller Exhaust Ventilating Connection.

All of the hot air pipes are provided with dampers at the furnace, and all of the hot water and hot air piping exposed in the basement is covered with nonconducting material. The dampers for regulating the draft are so arranged as to be operated from the upper floor by means of chains.

ROTARY SYSTEM OF HEATING.

BY F. B. K.

Having read the ideas of " Iowa " on furnace heating in *The Metal Worker* of March 8, I will state that I am in line with him, as here in Ohio I have advocated and put in inside air ducts for the " rotary system," as he calls it, for the last 10 or 12 years and have been very successful with it. I was the first to start it in my town, which is a college town, and I had a hard time of it for a few years in convincing the people it was not sure death to use such a system. I would like to have " Iowa " give a plan or sketches with description of how he connects the cold air ducts to the furnace. Also what parts of the house he takes to exhaust the air from. I usually take only one pipe from the hall, and it sometimes causes a draft of air toward the cold air register. He also states that he uses water to moisten the air, and I wish he would explain his method of doing it. I use no water in most of the furnaces I put in, the furnace manufacturers claiming it is not necessary. I think it is, or at least it would do no harm. If " Iowa " will give a set of plans and a complete description of his heating system I think there are a good many readers of *The Metal Worker* who would be thankful to him for it, if he thinks that would be sufficient pay for his trouble.

The Story of the Richmond Range.

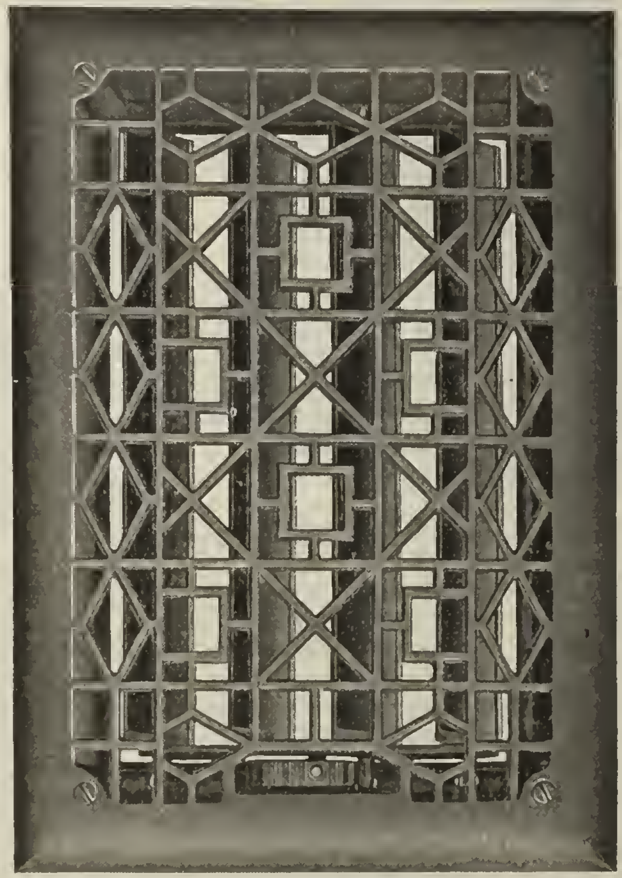
The Richmond Stove Company, Norwich, Conn., have gotten out an attractively illustrated book entitled " The Story of the Richmond Range," which is being distributed in the vicinity of New York by J. M. Litchfield, who is the company's agent, at 105 Beekman street. The story proclaims the many features of merit and the superb finish possessed by all of the Richmond ranges. The Richmond ranges are made in several series, each series consisting of a complete line adapted to the demands of some special line of trade. The finer goods are not only elaborately designed, but handsomely finished. They are provided with hot closets, high shelves, reservoirs, tea shelves, end hearths and cabinet bases, and are also equipped with thermometers in the oven doors. The catalogue also shows the Richmond Oak and the Richmond cylinder stoves, which are made as full revertible flue heaters, and also as air circulators and for heating an additional room. The air tight series Richmond is an oval stove for burning wood from 16 to 22 inches long.

Oak Peninsular Hot Blast Smoke Consumer.

The Peninsular Stove Company of Detroit, Mich., are constantly distributing among their customers attractive circulars calling attention to some of their many leading specialties in the way of cook stoves, ranges and heaters. Among the latest sent out is a folder, printed in colors, relating to the Oak Peninsular Hot Blast Smoke Consumer. The exterior of this heater is rich in appearance, the effects being produced by the judicious use of nickel plate in combination with cast ornamentation. Among the constructive features may be mentioned duplex grate and shaking ring, which can be withdrawn without removing a single plate or bolt; double feed door, circular draft regulator and door frames, having two fitting faces, which are made absolutely air tight. The hot blast attachment supplies the proper quantity of hot air for combustion, while the deflector ring and steel foot rail force the hot air to the floor. The ash pit is made of one piece, thus rendering it air tight, and is equipped with large ash pan and tight closing door. The Never Break steel leg base is of such a nature, it is claimed, as to save time, trouble and expense. The treble jointed fire pot has corrugations extending from the top to the bottom, which supply heated air and facilitate the burning of the fuel all around and in the center. The hot blast smoke consumer is claimed to give a most intense heat with a minimum consumption of fuel, this being accomplished by the air passing through registers in the feed door into the superheating chamber around the top of the fire pot, where it is intensely heated, the perforated blast making a fierce fire, which consumes all gases. A self feeding hard coal heater may be produced by putting in a magazine.

The New Kernan Register.

The Syracuse Stove Works, Syracuse, N. Y., have recently placed on the market an extensive line of improved hot air and ventilating registers, under the name Kernan. The registers are of Græco-Roman design. In addition to the regular smooth faced registers, the company also make a convex face register, as shown in the illustration herewith. These registers, which are made in a variety of sizes, have the advantage of not extending back into the hot air flue, which especially adapt them for use in connection with the shallow heating flues used in partition walls. The manufacturers state that these goods are made with great care and operate smoothly, while the design affords a large open area in the face through which the air can flow freely. A special feature of the device is a patent brass noncorrosive nut case with sleeve, so that in case of necessity the register face can be easily removed from the box containing the valves. This device also enables the operating lever to work freely. The governing rod is pivoted eccentrically to the slats, which have large ends to facilitate a frictionless, easy and noiseless opening and closing, and also adapting them to thermostatic control when desirable. These registers are furnished in different styles of finish and in various colors of bronze, nickel plate and black and white enamel. The company make special claims for the excellent finish which is given to their goods. They are prepared to furnish either slate, soapstone or suitable cast iron borders. The ventilating registers are provided with fixtures to be operated by cords and are made for both side wall and ceiling use. A catalogue recently issued by the Syracuse Stove Works gives full particulars of these goods and will be found of interest by the furnace contractor.



The New Kernan Register.

Morse Brothers, Canton, Mass., manufacturers of the Rising Sun Stove Polish and Sun Paste Stove Polish, advise us that they have largely increased their facilities for making the latter this season, and are now prepared to fill all orders promptly, which they were not able to do during the winter, owing to the excessive demand and inadequate output.

WESTERN IDEAS ON FURNACE HEATING.

BY CONFIDENTIAL.

A correspondent in Minneapolis, Minn., who views the question of the air supply to the furnace from the opposite extreme to that taken by "Iowa," whose contribution under the same head was presented in *The Metal Worker* of March 1, sends us a communication in reference to it, from which some extracts are presented below. We are always glad to present the views of those who are in touch with any branch of trade, except where criticism is the principal feature and where such criticism would tend to controversy rather than to draw out practical information based on experience. Criticism of this character is apt to shut off springs of valuable information, while if the same amount of energy is devoted to suggestion and explanation with the view of improvement, the original contributor may be induced to make further experiments and to give the result of his experience. The extracts from the contribution referred to are as follows:

About a dozen years ago, in consequence of the bad and dangerous methods in vogue in the plumbing work throughout the country, it became necessary to enact laws and frame ordinances in relation thereto. To-day, in consequence, plumbing systems have been greatly improved and the plumber has to know something. He has to pass a rigid examination and his work is inspected. If not done right it is condemned. There never was a time when there was more danger to be feared from defective plumbing than there would be now if the rotary circulation of air in connection with heating systems should come into general use. Think of it. A house of, say, six rooms, occupied by five people, who, with the lamps or gas jets, consume or destroy large quantities of oxygen, with no inlet for fresh air or outlet for air of any kind, heating and reheating, breathing and rebreathing day in and day out, and, to cap all, saturated with air with 6 gallons of water every day.

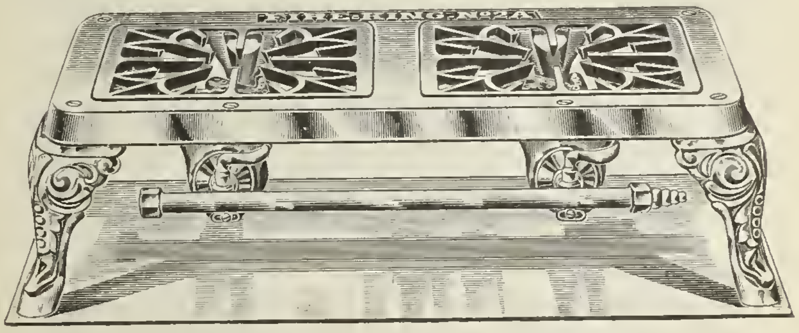
What becomes of all the water, as you cannot destroy a drop of it? Where does it go? Suppose a man having an ordinary furnace should conclude that he must have some moisture for the benefit of his own and his family's health, and having no other means at hand, he forthwith takes a sprinkler and showers every room with a gallon of water, and a gallon will go a long way toward getting a room good and wet. Suppose he continued the practice the next day, expecting his family to remain as occupants. If he persisted his sanity would be questioned. The humidity of the air cannot be very much affected by raising its temperature from a lower degree than that which is generally required for living purposes, say 70 degrees. It is true that at that point it will hold more water in suspension, as none has been lost, and as the lungs readily adjust themselves to any change of temperature. No more water is needed in a warm temperature when the air is rarefied. We breathe deeper, inhale and exhale more air, not to get water or moisture, but oxygen. The lungs give off an excess of moisture.

Under right conditions, 70 degrees of air artificially warmed in any way is not more injurious to the furniture, pianos, &c., than the summer temperature at the same point. What about the 90 and 100 degrees of air which is frequently breathed in the summer time? This is written from an easy chair that has been in constant use 20 years, on a table that has been used for 65 years. Each has endured stove, furnace and steam heat, and both are as firm on their legs and as tight in their joints as when first made. There is a piano in the house that has been in use 20 years. It is seemingly unharmed, except that it does not hold its tone quite as well as at first. A year or two ago a rocking chair was bought at a bargain counter and it fell to pieces within three months with only summer heat to dry it out.

The article also alludes to a large tank for holding water for moistening the air. Can any one imagine a place where a large amount of water would not putrefy and become a veritable cesspool? Would not the water absorb the impurities, and if not, why? In the ordinary course of events how often would such a tank be cleaned? If the air circulating through the house was saturated with water, what would be the result should the temperature of the air recede 40 degrees? Would it not make everything clammy? And what sort of a place would it be for a person with weak lungs, or consumption, or depleted in any way? Suppose there should be a severe case of sickness in such a house in which the air is rotated. Suppose you had a case of infectious disease. Would there be any isolation whatever?

Fire King Hot Plates.

Those who handle gas hot plates will be interested in the new Fire King gas hot plates, which are being put on the market this season by A. Weiskittel & Son of Baltimore, Md., as these new goods are claimed to have some special features. A general view of the new Fire King of the two-burner type is shown in Fig. 1, from which it will be noticed that the top gratings finish flush with the top, and yet can be thrown back on the hinges, as shown in Fig. 2. The burners can be lifted out for cleaning, and are of the latest improved drilled type, cast in one piece, thus avoiding leaky joints. The hot plates are made with one, two and three burners and are finished in nickel.



The Fire King Hot Plates.—Fig. 1.—General View.

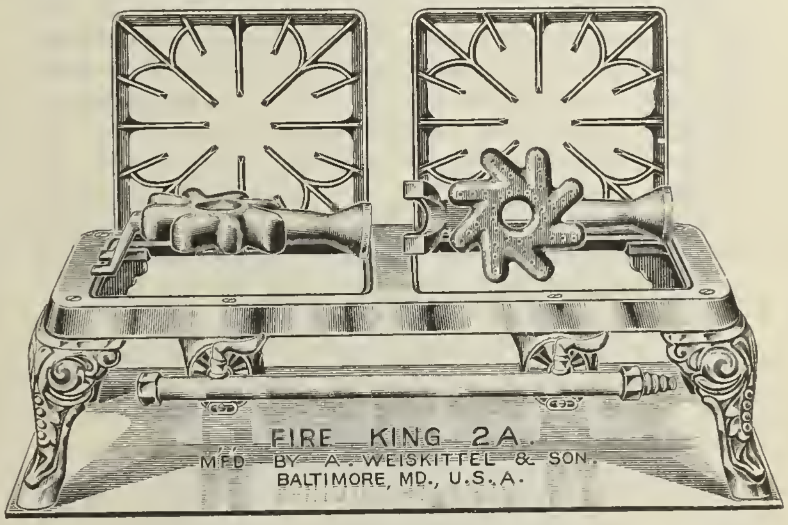

FIRE KING 2A.
MFD BY A. WEISKITTEL & SON.
BALTIMORE, MD., U.S.A.

Fig. 2.—Showing Top Raised and Burners Exposed.

PHILADELPHIA HEATER AND RANGE ASSOCIATION.

An interesting meeting of the Philadelphia Heating & Range Association was held a few days since at the Builders' Exchange in that city. The attendance was very good and comprised many of the leading representatives of the heater and range business in the city. Interesting discussions on trade protection and other matters of vital importance to the heater and range trade were discussed. Each member in attendance expressed the feeling that the time had been profitably spent, and that it might pay to have weekly meetings. The association, although not having one-half of the legitimate dealers represented as members, does represent fully 75 per cent. of the purchasing power in the heater and range business. The association is progressing rapidly and enjoys a protection that was thought impossible a year ago. At that time the heater and range business was in a deplorable condition. Anything in the line of heaters, ranges, tin, iron, or anything else could be bought at wholesale prices, but to-day in most lines the association is fully protected. In others they have partial protection; but, judging from what has already been done, full protection is hoped for in the near future, although there are a number of matters yet to be adjusted. These are being brought up in turn. The association invites every heater and range dealer to be present at its next meeting, which is to be held in the Builders' Exchange at 4 p.m., April 9.

ODD PLATES.

George H. Barbour of the Michigan Stove Company gave evidence at Washington last week before the House Committee on Commerce on the proposition to establish a Department of Commerce. Mr. Barbour imparted to the committee some striking facts regarding the Western part of the country, and Detroit in particular, with the idea of impressing the members with the growing importance of that section. He dwelt particularly upon the great Stove works of Detroit, and predicted that the city would soon become a center of iron manufacture. While in Washington, Mr. Barbour had a cordial interview with President Roosevelt at the White House.

The Chicago Furnace Supply Company, Chicago, have been incorporated with a capital of $15,000 for the purpose of manufacturing articles in iron and sheet metal. The incorporators are F. W. Metz, W. E. Williams and D. A. Colbert.

In an article on the possibilities of trade with China a writer in the *British Trade Journal* remarks as follows regarding Stoves and Kitchen Ranges: "In the South of China they would only be used by Europeans. Cooking of all kinds is done by the Chinese on Ranges made of brick and clay, and wood is used almost entirely. The cooking quarters are detached from the house, so that no fumes from the fires or from the cooking ever enter the residences. Of course, the Stoves cost almost nothing, and, as long as labor is cheap, these primitive Ranges will probably remain generally in use."

The Hess Warming & Ventilating Company, 131 La Salle street, Chicago, Ill., are sending out three booklets, one devoted to the Leader Hot Air Furnace; another to the Hess Pneumatic System of Drying and Cooling Grains, and the other exploiting their heating system.

The Reading Stove Works, Reading, Pa., have received a large order for Ranges for shipment to Johannesburg, South Africa. The company, during the past two weeks, have made shipments of their products to Tasmania, Valparaiso and Amsterdam.

The Miller Patent Ventilating System, described in connection with the article, "Modern Furnace Heating," in this issue, is the invention of William Miller, 2 Caton avenue, Brooklyn, N. Y., who has disposed of the right to use the patent in the United States to the Thatcher Furnace Company, 240 Water street, New York. As yet the right to use the patent in other countries has not been disposed of.

The Liberty Stove Company, Philadelphia, Pa., whose incorporation was recently mentioned in these columns, succeed the late firm of Charles Noble & Co., who had been operating the Liberty Stove Works in that city since 1851. C. M. Landenberger is president and H. M. Shipe secretary and treasurer of the new company. The manufacture of Iron King and Liberty Stoves and Ranges, &c., will be continued with new features and improvements, that will be offered in the coming season's goods.

The Somerset Stove Foundry Company, Somerset, Mass., have recently added to their extensive assortment of specialties a new medium priced Range, known as the Ideal Glendale. They will also place upon the market this fall a new Oak Stove, which will be of a character to meet the requirements of those desiring a first-class Heater. The Domestic Glendale Range, made in all the usual modifications, which was put upon the market last year, is proving very popular and the demand is showing a very gratifying increase from week to week. This Range is of attractive exterior and has among other features, a double oven top, perfectly straight from front to back. A neat pamphlet which the company are sending out calls attention to the merits of the Glendale Grand Range, made in a variety of styles and sizes, and which is fitted with a thermometer, by means of which the temperature of the oven can be seen at a glance; and the Somerset Pallas Range, which embodies the modern improvements. The company state that they have been manufacturing Stoves and Ranges since 1854, and they are, therefore, in a position to satisfactorily meet the requirements of the trade.

The Hart & Cooley Company, New Britain, Conn., are distributing a new catalogue and price-list of their Wrought Steel Registers and Ventilators. These Registers are manufactured wholly from wrought metal, so that, it is pointed out, breakage either in use or transportation is practically impossible. Reference is also made to their lightness in weight as effecting economy in freight, and their uniform thickness of 1¾ inches over all for all sizes as affording a great saving in stockroom.

An attractive souvenir in the shape of a match box was distributed to those attending the first annual meeting of the Pennsylvania Retail Hardware Dealers' Association in Pittsburgh, last week, by the H. Adler Company of that city, manufacturers of the Acme Stoves, Ranges and Ovens.

The Faultless Steel Range Company were sufferers from a fire which occurred in their building at 61[illegible] to 621 Austin avenue, Chicago, on the morning of April 1. The building was badly damaged, including the quarters occupied by the company. The loss is largely covered by insurance.

The Standard Blue Flame Oil & Gas Company of Chicago have been incorporated under the laws of the State of Delaware, with a captital stock of $500,000 to manufacture Heating and Cooking Stoves, &c.

Floyd, Wells & Co., Royersford, Pa., are sending out from their New York office, 210 Water street, the announcement that they are now prepared to show a full line of the Irving Ranges and Rosemont Heaters. The New York branch is under the management of R. W. Hillman, who is well known to the trade in New York City and vicinity. The company state that they have a large and complete line of heating and cooking apparatus, including Furnaces of all grades, Wood Stoves, Fire Place Heaters, Self Feeders, Oaks, Cylinders, Air Tights and Laundry Stoves. They also announce that they are now after the business of Stove dealers, and will be glad to send catalogue and prices to those who desire them. The company also issue a circular showing the Sparkle Range, made in 6, 7 and 8 inch holes, and ovens 18 inches square, with end ash pit, reservoir and high shelf, and all of the usual conveniences, handsomely nickel trimmed.

The Great Western Stove Company, Leavenworth, Kan., are planning to erect a large six-story warehouse, to cost $40,000, at Omaha, Neb., to be ready for use this year.

"The Sprayers' Advocate" is the title of an illustrated circular published by the Berger Mfg. Company of Canton, Ohio, in the interests of their Novelty Force and Spray Pumps. It contains information regarding the manufacture and use of these Pumps, and also a number of useful recipes for spraying compounds for the protection of various kinds of trees, plants and vegetables.

A letter from the Chappell Furnace Company, Morenci, Mich., informs us of their incorporation with a capital of $15,000 for the purpose of making the Chappell low down base burning all cast iron coal and wood Hot Air Furnace. The officers are E. B. Rorick, president; C. A. Wilson, vice-president; J. M. Triggs, secretary; W. B. Rorick, treasurer, and W. H. Chappell, superintendent. The officers are experienced business men and the superintendent a furnace maker of 30 years' successful practice. The company are issuing a catalogue giving full particulars in reference to the Chappell Furnace.

PENNSYLVANIA RETAIL HARDWARE DEALERS' ASSOCIATION.

The first annual meeting of the Pennsylvania Hardware Dealers' Association was held at the Monongahela House, Pittsburgh, on March 26 and 27. Nearly 50 firms were represented. The meeting was called to order by President George L. Moore on Wednesday morning, and A. C. Robertson, representing the City Recorder, welcomed the association. President Moore responded with appropriate remarks. A number of addresses followed, in which the speakers expressed their sympathy with the work of the association. M. L. Corey, secretary-treasurer of the National Retail Hardware Dealers' Association, who was present by invitation, took occasion to explain that the Pennsylvania Association was not organized for the purpose of fighting, but for coming together on many vexing questions.

The president appointed the following committees:

PRESS: R. R. Williams, Mr. Dickson, J. T. McKean.
RESOLUTIONS: M. L. Corey, E. D. Everts, Geo. V. Thompson.

The Entertainment Committee in charge of the meeting consisted of J. E. Digby, McKee's Rocks; H. F. Robinson, Charleroi, and George T. Rudolph of Pittsburgh, who performed their duties in a very efficient manner. The banquet given on Wednesday evening was under their supervision and was an occasion of much enjoyment.

A. Q. Casselberry of Pittsburgh, chairman of the Committee on Constitution and By-Laws, made a report, which, with some minor changes, was adopted. A number of practical questions in regard to the conduct of business and improvements which might be made in store management, received attention from the convention, among which was the matter of keeping track of cash handled in a store. Various suggestions were made by the members as to the prevention of loss through dishonesty or neglect.

The executive sessions of the association were held on Wednesday evening and Thursday morning with a large attendance of members. On motion it was decided that the next annual meeting be held in Pittsburgh.

In the course of the convention S. S. Bryan of Titusville read an interesting paper on "The Necessity of Organization," and a paper on "Progress" was read by A. Q. Casselberry.

J. F. Frye of Charleroi, former secretary of the association, resigned his office and J. E. Digby of McKee's Rocks was chosen to succeed him, making the staff of officers as follows:

PRESIDENT, G. L. Moore, Brownsville.
VICE-PRESIDENT, Geo. J. Rudolph, Pittsburgh.
TREASURER, B. A. Maggini, Braddock.
SECRETARY, J. E. Digby, McKee's Rocks.

The following were elected members of the Executive Committee in accordance with the new constitution:

Samuel McKnight, Allegheny.
C. J. Kirk, New Castle.
A. M. Gregg, Monongahela.

At the banquet on Wednesday evening R. H. Geiger acted as toastmaster. The principal speaker was James Francis Burke, whose topic was "Pittsburgh." Mr. Burke delivered an eloquent address, laudatory of the Iron City. Other addresses were made by T. James Fernley, secretary-treasurer of the National Hardware Association; R. R. Williams, hardware editor of *The Iron Age*, and M. L. Corey, secretary-treasurer of the National Retail Hardware Dealers' Association.

Enameled Tea and Coffee Pots and Pans.

The Cleveland Stamping & Tool Company, Cleveland, Ohio, manufacturers of Lava enameled solid steel hollow ware, have recently begun the production of a new line of tea and coffee pots, dish and rinsing pans and the Utility kettle, all of which are made in mottled brown and white. The coffee and tea pots have wood handles and enameled covers, and are made in 1½, 2, 3 and 4 quart sizes. They also make seamless deep dishes and rinsing pans in 10, 14, 17 and 21 quart sizes. The Utility kettle for milk, beer, oysters, &c., has a capacity of 1½, 2, 3 and 4 quarts, all of which are shown in a supplement to their 1901 catalogue.

A VIRGINIA RETAILERS' ASSOCIATION.

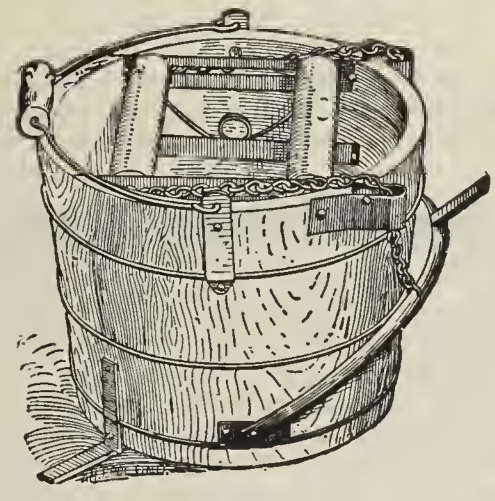
A charter of incorporation has been granted to the Retail Stove and Sheet Metal Workers' Association of Norfolk, Portsmouth and Berkeley, Va. The objects of the association, as set forth in the charter, are "to aid and benefit the members by bringing them into closer social and business intercourse, elevating the standard of business and securing fair and proper business methods." The capital stock of the association is to be not less than $500 nor more than $5000, divided into shares of $50 each.

The officers of the association are: P. J. Riley of Portsmouth, president; W. C. McGinley of Berkeley, vice-president; W. M. Bohn of Norfolk, recording secretary; E. H. Odenthal of Norfolk, financial secretary, and George W. Battley of Norfolk, treasurer. These, with the following, are to compose the Board of Directors: W. H. Barnard, J. V. Kiernan, George B. Crow, B. H. Evans, James Lilliston, E. Kavanaugh, John T. Howard, George E. Watson, W. J. Messick, W. J. Shepherd, Joseph L. James and Frank P. Smith of Norfolk; J. E. Fentress and J. W. West of Norfolk County; R. L. Albert, Oscie Dashiell and A. L. Cherry of Portsmouth.

The Retail Stove and Sheet Metal Workers' Association of Norfolk, Portsmouth and Berkeley, which has been in existence for some time, is one of the most flourishing organizations of its kind in the United States. Among the advantages secured are that a general contractor can get no estimates for work if it is proved that he has unjustly failed to pay a member of the association for work done. A general contractor is also required to give bond for payment of the price on contract, or a notice is served on the owner holding him responsible. Other rules are that no member is allowed to use any new material furnished by the owner, nor is any member allowed to put in or repair stoves or furnaces bought by the owner in other cities. Friendly and social intercourse between competitors has also tended to add to the pleasure and soften any asperities of business. The members of the association make it a rule to confine their purchases to those dealers who sell only to its members.

The Beach Patent Mop Wringer.

The Beach Novelty & Wringer Company of Mansfield, Ohio, are placing on the market the Beach patent mop wringer, of which an illustration is presented herewith.



The Beach Patent Mop Wringer.

The article consists of a cedar pail, seasoned maple rolls, solid brass springs, steel chain and side bars, wrought iron foot holds and levers and two small pulleys of cast iron, all put together with screws. The entire weight, ready for shipment, is 8 pounds. The manufacturers claim that the pails cannot dry out and fall apart, as they are put together with wire hoops sunk in grooves in the wood and welded by electricity. The wire springs are protected by iron guards from catching in the mop. The whole device is made to stand the most severe and constant use. The wringer wrings all kinds of shapes or sizes of mops. It is also adapted to wringing dirty cloths without the need of touching them with the hands, using a pair of pincers to draw them through the rolls. In mopping floors, porches, &c., hot water in which purifying or disinfecting chemicals are dissolved can be used, thereby obtaining the best possible sanitary results. The hands need never come in contact with the mop or cloth. The claim is made that in wringing the mop in the old way, by twisting with the hands, the dirt is left in the center of the mop, while with the use of the Beach wringer not only is the water excluded, but it carries with it all impurities and leaves the mop clean.

Neverslip Cover.

The Neverslip Tin Cover Company, Watertown, N. Y., are manufacturing the Neverslip tin covers for kettles and saucepans, as here shown. Fig. 1 illustrates the cover as put on the market. Fig. 2 represents it in position on a saucepan, Fig. 3 being another application of it to a kettle. The purpose of this form of cover is to enable the housekeeper to drain a kettle or saucepan without risk of injury from scalding water or steam.

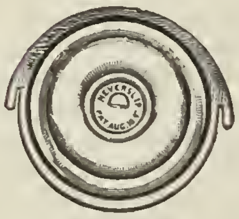


Fig. 1.—Neverslip Tin Cover.

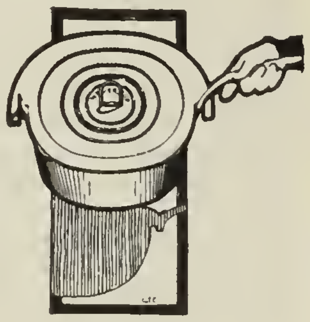


Fig. 2.—Method of Using on Saucepan.

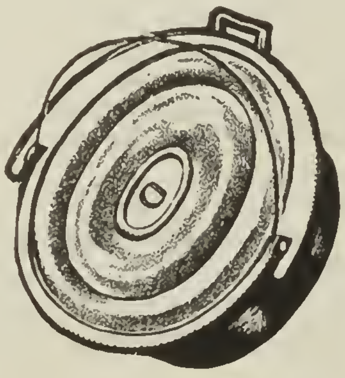


Fig. 3.—As Used on Kettle.

The cover is so made that the ears on the sides of the cover slip under the ears of kettle or saucepan, thus keeping it in proper position when pouring off hot water.

Stove and Hardware Dealers.

Eureka Refrigerator Company, Indianapolis, Ind., have issued a new catalogue of Opal Refrigerators. These Refrigerators are made in five regular stock sizes in two different styles, opal, all opal enamel inside and out, Nos. 1, 2, 3, 4 and 5, and oak cases, with opal enamel lining, Nos. 51, 52, 53, 54 and 55. Special sizes will be built to order to fit any desired space. The opal enamel used in their Refrigerators, which have six non-conducting walls, is referred to as a pure white solid enamel, made in large perfectly smooth sheets. The frame is made of 2½ and 3 inch poplar wood, thoroughly seasoned and kiln dried. The trimmings are solid brass, heavily nickel plated.

Stephenson & Garrard have purchased the stock of Hardware, Stoves, Tinware, Harness, &c., of the Stephenson Hardware Company, Oxford, Ohio, and will continue business in the same store. The receipt of catalogues, circulars, prices and terms from manufacturers in the above lines will be appreciated by the new firm.

The Bronson-Walton Company, Cleveland, Ohio, have issued an illustrated catalogue in *fac-simile* colors of Wall Coffee Mills, to hold 1 pound of coffee in the bean, the canisters of which are both metal and glass, square and round, those with metal canisters being lithographed. They also make Decorated Square Box Mills, Roasters, Bakers and Wire Rope Clamps.

Boyer & Osborne have engaged in business at Battle Creek, Neb., carrying a general line including Hardware, Tinware, &c.

E. C. Whitlock has opened a Hardware store at Kinross, Iowa, with tin shop and Pump department in connection with it.

W. S. Brown has succeeded Clapp & Brown in the Hardware, Stove and Plumbing business in Cherryvale, Kan.

Bluffton Mfg. Company, Bluffton, Ind., are sending out a circular in which they remark, apropos of the season, "28 years in the business proves that we are no spring chicken." Illustrations are given of their American Rotary, Round, Square and Open Washing Machines.

H. Clay Lynn, 409 Brook avenue, Richmond, Va., is desirous of obtaining Brass Milk Spigots suitable for delivery Milk Cans from 10 to 20 gallons capacity. He wishes to secure a Spigot that is easy to keep clean and that has a large opening. Mr. Lynn also desires to obtain catalogues and price-lists from manufacturers of goods in this line, and also of dairy goods generally.

Howe & Flint, who have been in the retail Stove business at 51 Union square, Somerville, Mass., for the past 27 years, have dissolved partnership. The business will be continued by William S. Howe.

C. A Watson has succeeded A. Watson & Son at Sheridan, Mo., dealers in Hardware, Stoves, Farm Implements, Sporting Goods, Paints, Buggies, furniture, wall paper, &c. The new proprietor will make some improvements in the establishment, including additional shelving and fixtures, although the store is referred to as already one of the most complete and best arranged in Worth County.

Milford Mfg. Company, Milford, N. Y., have recently been incorporated with a capital stock of $6200. The directors of the company are: C. J. Armstrong, A. S. Luther, G. G. Whitney, W. B. Whitney and G. L. Lyon. The company will succeed to the business of Lyon & Whitney, and will continue the manufacture of Ball Bearing Egg Beaters and other novelties.

B. W. Henderson has succeeded Henderson & Cleveland in the Hardware, Stove and Farm Implement business in Rodney, Iowa.

Hawley & Dewhurst, Blanchard, Iowa, have taken into partnership with them W. J. Boyle, and the style of the concern is now Hawley, Dewhurst & Boyle. They have erected a new brick building for their Implement business, and changed their old building into a Hardware store. They are now handling Shelf and Heavy Hardware, Stoves and Tinware, Agricultural Implements, Sporting Goods, &c.

Ed. McGann and J. Carroll Smith have formed a partnership to carry on a retail Stove and Hardware business at Oswego, N. Y., under the firm name of McGann & Smith. They will open a store about May 1 at the corner of East Second and Utica streets, with a complete stock of Builders' and General Hardware, Stoves, Ranges, &c.

Malleable Glass.

It is announced that Louis Kauffield, a well-known glass manufacturer of Matthews, Delaware County, Ind., after experiments covering two years, has discovered a method for making malleable glass, which has been considered as one of the lost arts. Malleable glass, it is said, is not sensitive to sudden changes of heat and cold, and may be molded very much after the manner of iron. Those who have tested the material produced by the Kauffield process are reported to be convinced that an entirely new and valuable product has been discovered, which may be applied to all kinds of glass ware and which is calculated to revolutionize the glass making industry.

Amended Plumbing Regulations.

Perez M. Stewart, Superintendent of Buildings for the borough of Manhattan, New York City, has posted amendments to the plumbing and drainage rules and regulations of his bureau as follows:

Paragraph 11 is hereby amended so as to read as follows:

" Once in each year every employee or master plumber carrying on his trade, business or calling in the city of New York shall register his name and address in the office of the Bureau of Buildings in the borough in which his place of business is located."

Paragraph 111 is hereby amended by adding at the end thereof these words:

" A plumber proposing to do work in a borough other than that in which he is registered shall present his certificate at the office of the Bureau of Buildings in that borough before commencing work, so that the fact of his having been properly registered may be recorded."

Section 79. Substitute the following:

" Section 79. A fresh air inlet must be connected with the house drain just inside of the house trap; where underground, it will be of extra heavy cast iron. It must extend to the outer air and finish with a return bend at least 1 foot above the grade and 10 feet away from any window or cold air box. When this arrangement is not possible the fresh air inlet must open into the side of a box not less than 18 inches square, placed below the sidewalk at the curb. The bottom of the box must be 18 inches below the under side of the fresh air inlet pipe. The box may be of cast iron, or it may be constructed with 8-inch walls of brick or flagstone laid in hydraulic cement. The box must be covered by a flagstone fitted with removable metal grating, leaded into the stone, having openings equal in area to the area of the fresh air inlet, and not less than ½ inch in their least dimension. The fresh air inlet must be of the same size as the drain up to 4 inches; for 5-inch and 6-inch drains it must not be less than 4 inches in diameter; for 7-inch and 8-inch drains not less than 6 inches in diameter, and for larger drains not less than 8 inches in diameter, the removable portion of grate to be at least 8 x 12 inches in area. An automatic device approved by the Superintendent of Buildings may be used, when set in a manner satisfactory to the said superintendent."

Section 97. Substitute the following:

" Section 97. No form of trap will be permitted to be used unless it has been approved by the Bureau of Buildings, and no masons' cesspool, bell, pot, bottle or D trap will be permitted, nor any form of trap that is not self cleaning nor has interior chamber or mechanism, nor any trap, except earthen ware ones, that depend upon interior partitions for a seal."

Section 119. Substitute the following:

" Section 119. In lodging houses the water closet and urinal apartments must have a window opening to the outer air; if three stories or less in hight, they may have such window opening on a ventilating shaft not less than 10 square feet in area."

Section 131. Substitute the following:

" Section 131. In lodging houses there must be one water closet on each floor, and where there are more than 15 persons on any floor there must be an additional water closet on that floor for every 15 additional persons or fraction thereof."

Change the number of section 134 to section 133 and substitute the following:

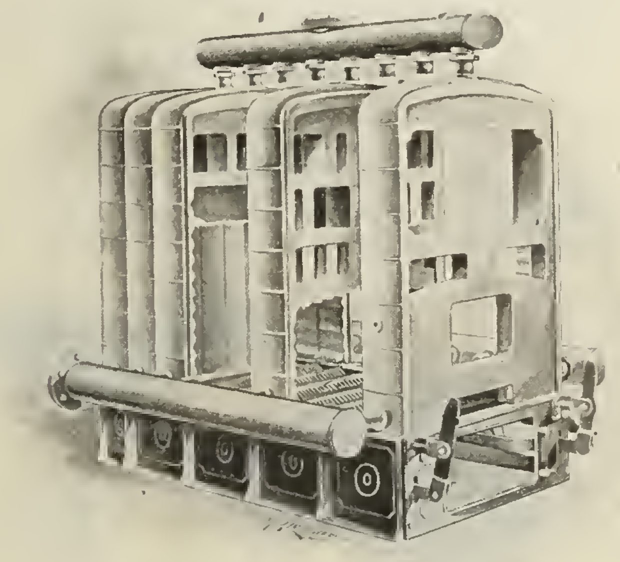
" Section 133. Water closets and urinals must be flushed from separate cisterns on each floor, the water from which is used for no other purpose; where flushometers are used, they must be supplied from separate tanks provided for that purpose, and in no case are connections to be made direct with the water service pipe."

Plumbers' Marble Men Organize.

Representatives of most of the firms in the United States engaged in the manufacture of plumbers' marble slabs met last week at the Gibson House, Cincinnati, Ohio, to permanently organize the Marble Manufacturers' Association of the United States. Among those present were the following: John R. Hugg, Evans Marble Company, Baltimore, Md.; C. L. Hillgarten, Hillgarten Marble Company, Baltimore, Md.; F. J. Lautz, Lautz Marble Company, Buffalo, N. Y.; Theodore Ahrens, Standard Sanitary Mfg. Company, Louisville, Ky.; W. E. Higbee, representing the Vermont Marble Company, Rutland Marble Company and the Columbian Marble Quarry Company; Jos. Krulish, representing the New York manufacturers; L. D. Lawnin, Illinois Marble Company, Evansville, Ill.; B. L. Pease, Tennessee Producers' Marble Company, Knoxville, Tenn.; H. M. Hoelscher, L. Wolff Mfg. Company, Chicago, Ill.; John M. Mueller, Standard Marble Works, Cincinnati, Ohio. The Buckeye Marble Works of Cincinnati, Ohio, were also represented.

The American and Advance Boilers.

After many years of experience in the manufacture of steam and hot water heating boilers, of both the push nipple and screw nipple with header type, the Pierce, Butler & Pierce Mfg. Company, Syracuse, N. Y., announce that they have decided to abandon the push nipple type of construction and construct an entire new line of patterns for the American and Advance boilers with 16 and 22 inch grates and headers with screw nipples. This is done with a view for providing a boiler which can be more readily set up and made tight, and more readily repaired in case of necessity. When these boilers are complete the company will have a line of sectional boilers of the header type, ranging in capacity from 400 to 6100 square feet of direct radiation for steam, and from 600 to 10,000 square feet of direct hot water radiation. In the accompanying illustration a partly assembled boiler of this type is shown, from which a good idea can be had of the fire and flue surface presented and also of the fire and water travel. All of the American and Advance boilers for steam or water have the same kind of base and grate, and having a bridge wall, will be furnished with iron partitions to be placed in the base, and the heating contractor can brick the ash pit to meet this partition. Either fine or regular grates can be furnished to suit the fuel to be used. Rubber gaskets for header flanges and candle wicking for lock nuts will be supplied with the boiler. Complete directions for erecting as well as for operating the boilers are sent in the box with the trimmings. The company are sparing no effort to make their product convenient and satisfactory to both the contractor and the user.



The American and Advance Boilers.

Those who are engaged in the heating trade have derived no little benefit from the wide distribution of the pamphlet, "The Home Successful," circulated by the American Radiator Company of Chicago, which explains the advantages of heating houses by means of steam and hot water. The pamphlet has not only attracted attention, but it has been widely read owing to the character of the illustrations, which bring out many of the points in the reading matter in a manner to make a lasting impression. Those who read it are very apt to send an inquiry for an Ideal Boiler, or the American Radiators, to their local heating contractor.

Traps and Trapping.

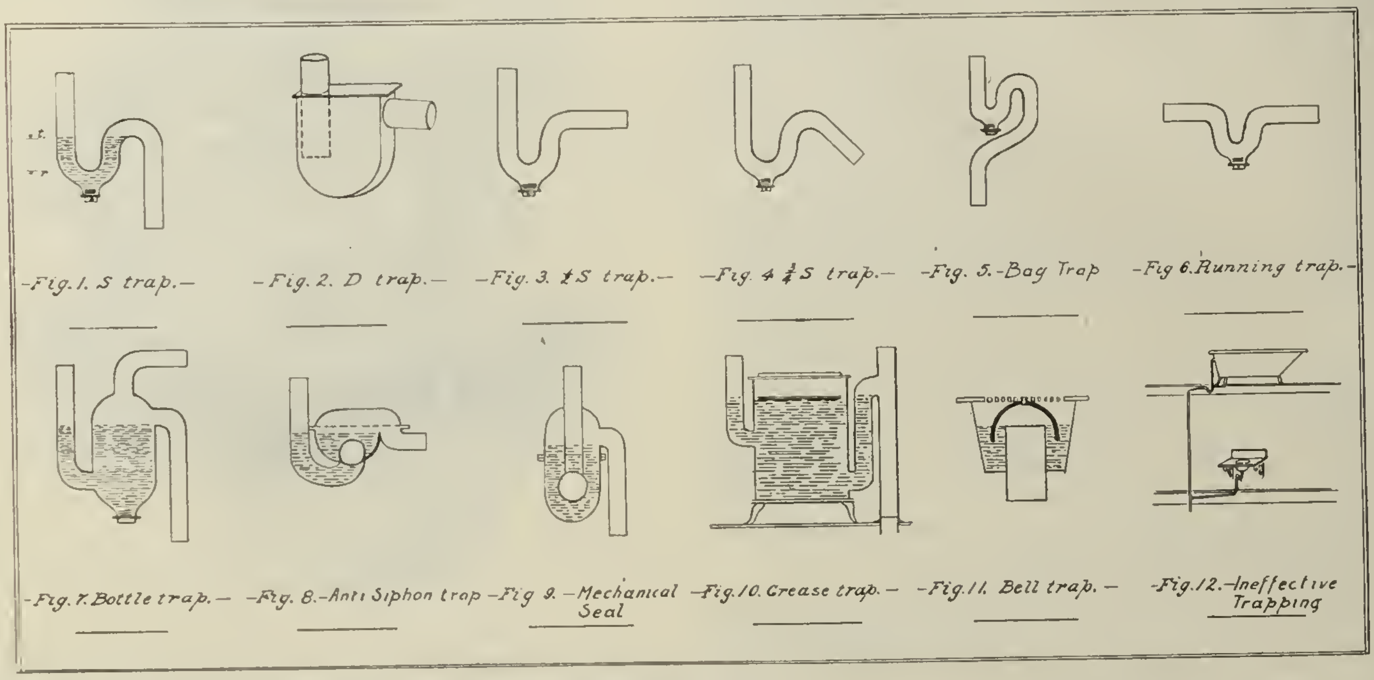
The Use and Misuse of Traps as Applied to Plumbing.

BY OLIVER TWIST.

What a Trap Is.—To begin at the beginning, it might be well to state that a trap, as used in the plumbing business, is a device to prevent the passage of a vapor or sewer gas through a pipe by the interposition of a denser body, usually water. In its simplest form it consists of a downward loop or bend in a pipe, that will retain a sufficient amount of water to accomplish the purpose. In order to be effective it must hold enough (in excess of what is required to fill the diameter of the pipe) to guard against the various agencies that are at work to unseal the trap. In Fig. 1 the body of water between *r* and *t* is the seal. The hight of this body must not be so great as to stop the free passage of any liquids or waste products that would be properly discharged through the trap. Some traps are so constructed that this invariably happens. The water gets through, but so many scraps of foreign matter are retained that a barrier or stoppage is formed which finally makes the fixture to which it is attached useless, until the plumber is called in to remedy the trouble. A good trap should be self cleansing.

A Short History.—As late as 1750 the principal cities of the world were practically without plumbing. People were allowed to throw out into the streets all kinds of refuse and filth. It is said that the first trap used in England, as applied to a fixture, was in 1775, when a man named Cummings took out a patent for a water closet trap, shown in Fig. 1, which had beneath it the full pipe S. It was about this time that plumbing work was introduced into the homes of the wealthy and into the upper rooms of houses, but it was of a very unsanitary character.

The form of trap shown in Fig. 2 is known as the D trap, and was in use in 1790. With some slight changes in shape and method of manufacture it continued in use for many years. It was made usually of sheet lead with soldered joints, and was of large size, which of course was a detriment to the action, preventing the interior, which exposed a large surface, from being thoroughly scoured. Thus it was a gas generator, and, having no ventilation, the dip pipe often corroded so as to allow the sewer gas to pass on up into the house, while the body of the trap might remain water tight. Thus it was possible to have a trap for protection against sewer gas which gave no protection and was actually in many cases a source of disease. Later on, as plumbing appliances increased, it was a favorite plan to carry the water pipe from sinks, basins, &c., into a stone drain, where a depression was made to hold 8 or 10 inches of water, into which the ends of the pipe dipped. P. J. Davies, in his work on plumbing, says that in England in 1865 it was customary to use a flower pot with a little cement in the bottom, thus forming a bowl into which the end of the waste pipe was dipped.



-Fig. 1. S trap.-
-Fig. 2. D trap.-
-Fig. 3. ½S trap.-
-Fig. 4 ¾S trap.-
-Fig. 5.-Bag Trap
-Fig 6. Running trap.-
-Fig. 7. Bottle trap.-
-Fig. 8.-Anti Siphon trap
-Fig 9.-Mechanical Seal
-Fig. 10. Crease trap.-
-Fig. 11. Bell trap.-
-Fig. 12.-Ineffective Trapping

Traps and Trapping.

Kinds of Traps in Use To-Day.—They are very many, at least in name. Perhaps the most generally used are the round section seamless lead traps that have been named after the letter their shape suggests. Fig. 1 is called an S trap. Fig. 3 half S trap, Fig. 4 a three-quarter S trap, Fig. 5 a vertical or bag trap and Fig. 6 a running trap. Being round in section, they are easily attached to the various couplings and waste and vent pipes, and are made in all the various weights and sizes to suit the pipes to which they are to be connected. The trap shown in Fig. 7 is used a good deal in some localities under the floors of bathrooms, &c., to take the waste from baths, or basins. It is hard to siphon out, and is likely to accumulate dirt or grease on the surface of the water.

The advent of the exposed plumbing work brought a demand for traps of a more ornamental character, which are to be had made of cast or drawn brass, nickel plated of such varied shape and styles as to make their enumeration impossible here.

Another class are the anti-siphon traps, that contain a mechanical seal. The mechanical seal consists of a ball or float that forms a valve by being held up against the inlet of the trap, as in Fig. 8 and 9, by its buoyancy, which in neither case is sufficient to prevent the free passage of water. These traps are for use in connection with baths or basins where the discharge is not likely to be very dirty, as from sinks, &c.

A trap for use in connection with hotel sinks or in any place where quantities of grease are likely to be discharged into the waste pipes is shown in Fig. 10. It is designed to prevent the choking of waste pipes from grease by intercepting it in the trap, where it accumulates on the surface of the water, and from whence it may be removed through a large cover provided for the purpose. In order to add to its efficiency, a water jacket is provided in some forms of this trap which allows the water drawn through the bib at the sink to first pass around the outside of the trap chamber, thus chilling the contents and causing the grease to form into a cake on the surface.

Fig. 11 shows the bell trap, the seal of which is formed by the bell dipping into a pool of water contained in the chamber shown. These traps are made of cast iron with brass gratings and are used very often in the draining of cement floors and such places where the body of the trap is out of sight and the brass grating finished flush with the surface of the floor. They also used to be attached to cast iron sinks, but were not a success, for that purpose at any rate. They have the drawback that they quickly loose their seal by evaporation, because the quantity held is small and shallow, and it is easily siphoned.

Traps are also made of cast iron in the various sizes and weights corresponding with the soil and drain pipes in connection with which they are intended to be used, as well as of vitrified earthen ware for use with tile drains, &c. All of these traps should be provided with cleanouts, that are water and gas tight, preferably with brass screw threads, and in the large sizes should be of sufficient diameter to admit the hand to remove any large substance that might become fast in them. Flap valves or check valves should not be depended upon to seal soil or waste pipes, as matter lodging under the flap or check will prevent their closing.

How a Trap May Become Ineffective.—Traps may lose their seal and thus permit the passage of sewer gas through siphonage, evaporation, back pressure, oscillation or momentum and capillary action. They are sometimes made useless by mistakes in the connection of vent pipes and through bypasses. Siphonage is brought about by the creation of a vacuum on the sewer side of the trap, often caused by the sudden discharge from a fixture completely filling the waste pipe and rushing past the various branches connected with the same, where the traps are not vented or where the vent pipes may be obstructed. This may be better understood by referring to Fig. 12, in which a bathtub on an upper floor is shown connected with, say, 1½-inch waste pipe, into which is joined the waste from a wash basin on the floor below, both fixtures being trapped and not ventilated. If the contents of the tub be discharged there will be a column of air followed by a column of water like a plug, completely filling the vertical pipe and descending with considerable velocity. This may cause the pressure on the sewer side of the basin to exceed the atmospheric pressure on the house side, thus forcing sewer gas into the room by back pressure. The water column following, however, and rushing past the branch will reverse the conditions and create a suction in the basin waste and cause the basin trap to be siphoned out sufficiently to allow sewer gas to pass.

Back pressure occurs not only in the manner just mentioned, but where ventilation is not provided and the outlet of the sewer becomes closed by tides, heavy rain storms, or by the manholes in the streets becoming clogged by snow or ice.

Momentum or oscillation of water in traps is caused by a strong draft or wind blowing through the soil pipes and causing the contents to oscillate or wave out. Capillary action empties traps through the peculiar molecular attraction which causes a liquid to rise through a tube of slender bore, or through cloth or string. When the lint from towels gets into a trap with one end immersed in the liquid and the other hanging over the dip, the water will climb up and over. The last two mentioned causes are not likely to give much trouble in actual practice.

It has been asked if the water in a trap will absorb gas and emit it again. It is true that water will absorb gas, but not enough to be objectionable. Of carbonic acid gas it is said to absorb an amount equal to its own volume and of ammonia 780 times its bulk.

The Proper Use of Traps.—There is a wrong place for traps, and right and wrong way to use them. It is also quite possible to have too many. Sometimes the best way to learn how to do a thing right is to show how it is to be done wrong, so as to know what to avoid. It should be remembered that every foot of drain, soil or waste pipe is to some extent a gas generator; that they are conveyors of sewage, which is a combination of water mixed with all kinds of refuse and waste matter, soap, grease, kitchen slops, human excrement, vegetable and animal substances, &c., which it is very desirable to have removed from the premises as quickly as possible; that sometimes many particles are left behind the flush of water that is designed to remove them; that decomposition and chemical changes are taking place; that disease germs live and multiply there; that a combination of gases known as sewer gas is continually forming, and that to have sewer gas in the home, to breathe it and live in it is highly dangerous, productive of disease and death. Probably no one will admit that it is better to be without the conveniences of modern plumbing fixtures altogether than to run any risk of losing from the home through the effects of bad plumbing work one who is dear. It is plain, however, that any agency that will secure the exclusion of sewer gas while allowing the use of these manifold plumbing appliances that we cannot, in the cities at least, possibly get along without, is not a luxury but an absolute necessity. To this end plumbing laws and ordinances have been framed to guide the plumber as to the proper use of traps, and while some laws are at variance with each other on some questions (for instance, the interception trap at the entrance of the sewer to the house drain) they all agree that the proper place for a trap is as near to the fixture as it is possible to have it, and that in almost every instance each fixture should be trapped separately.

It is also admitted that dead ends of pipes should be avoided; that ventilation is the means to that end; that the whole plumbing system should be ventilated by a full size pipe to a point above the roof, and that traps, as a rule, should be ventilated, because otherwise they would be "dead ends." It is generally conceded and almost invariably demanded that there shall be a main trap to separate the sewer from the house drain, commonly called "interception" trap, because it is supposed to intercept the passage of disease laden air that may exist in the street sewer.

A trap having a shallow seal should not be used where water is likely to flow through at rare intervals, such as at area drains, leader pipes, subsoil drainage, &c. All such places should be protected by traps having deep seals from 6 to 12 inches, as a protection from evaporation.

Sure Grip Malleable Tank Lugs.

The Racine Tank Lug Company, Racine, Wis., are manufacturing the Sure Grip lugs, to be used in fastening the bands of tanks. They are made in a variety of styles, several of which are herewith illustrated. Fig. 1 shows a lug for two bolts, two key wedges being used side by side. This lug is used for bands exceeding 3½ inches in width. Fig. 2 shows a single bolt lug. Fig. 3 shows a single bolt lug with the side cut away to expose the key wedge and band. The lugs are made of malleable iron, and are referred to as being not only simple and easily applied, but as very strong.

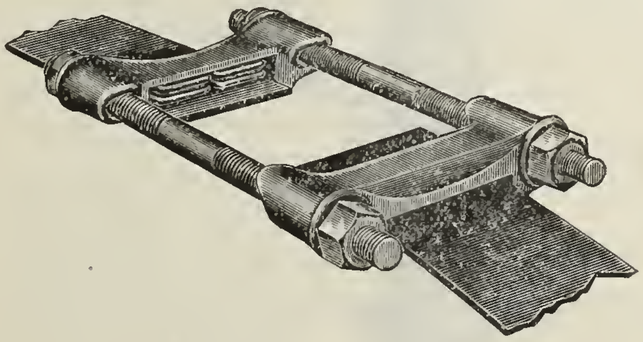


Fig. 1.—Lug for Two Bolts.

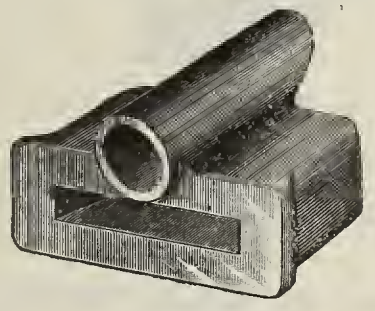


Fig. 2.—Single Bolt Lug.

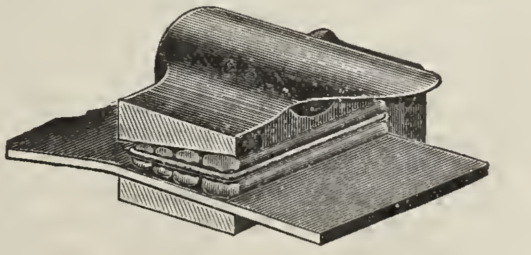
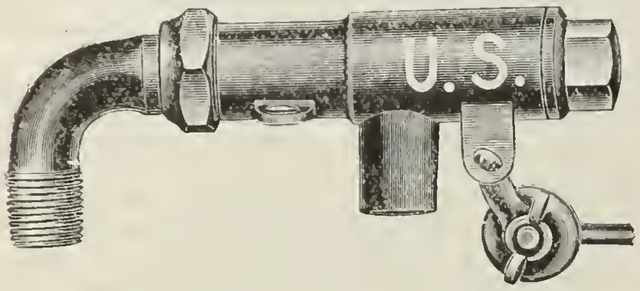


Fig. 3.—Showing Key Wedge and Band of Single Bolt Lug.

U. S. High Pressure Ball Cock.

The ball cock is considered one of the most important features of a plumbing system in a building, inasmuch as a ball cock of small area and cheaply made will drip, sizzle and sing. In the accompanying illustrations is shown the U. S. high pressure ball cock, which is being manufactured by the Julian D'Este Company, 24 Canal street, Boston, Mass. This ball cock is said to have a balanced valve and a waterway of full size. It is made in all sizes, from ½ to 4 inches, with a renewable seat of the best bronze metal. The company guarantee it to work equally well under either low or high pressure, and claim that it will not hammer even under the pulsation of a pump. Fig. 1 shows the ball cock as arranged for tanks having a top supply, and Fig. 2 shows it as arranged for tanks having a bottom supply. It will be noted that the rod to which the ball is attached is connected with the cock, so that it is adjustable. The company issue circulars giving full particulars of these goods, which can be secured on application.



The U. S. High Pressure Ball Cock.—Fig. 1.—For Top Supply.

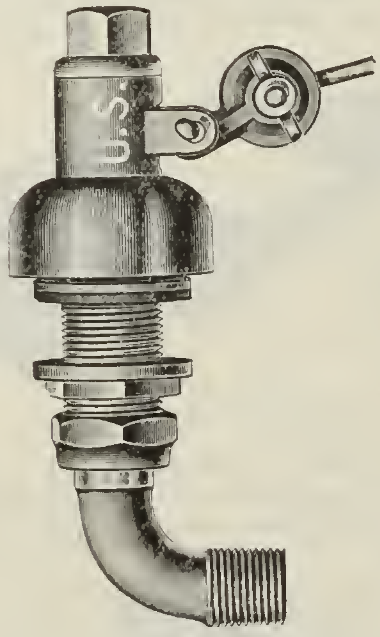


Fig. 2.—The Bottom Supply Cock.

New Quarters of Kellogg-Mackay-Cameron Company.

The Kellogg-Mackay-Cameron Company, manufacturers of steam and hot water boilers and fitters' supplies, are now occupying their new quarters in the Clow Building on the northeast corner of Lake and Franklin streets, Chicago. This building is a very large structure, and provides them with facilities vastly superior to those afforded by their old location. It is six stories high and has a large basement with storage accommodations extending under the sidewalks, thus affording a great deal of room for heavy stock. The basement also provides plenty of room for an electric light plant, pipe cutting and threading machines, &c. The offices are located on the ground floor and enjoy ample light from the windows on Franklin street, thus enabling the officers and clerical force to enjoy natural instead of artificial light, which is greatly appreciated. A portion of the same floor will be used for the display of samples. The rear of the ground floor is partly used as a shipping room, while a mezzanine floor over this department gives ample room for bookkeepers and stenographers. The upper floors will be used for storage purposes, the building being so substantially constructed that even the heaviest articles can be safely carried there. A large freight elevator in the rear enables all goods to be conveniently transported from one floor to another. The location of this building is admirable. Fine facilities for receiving and shipping goods are afforded on Franklin street on the side and on a large alley in the rear. It is in the heart of the city, and is thus conveniently situated, not only for the local heating trade, but also within easy reach of all the freight depots, either rail or water. The officers of this company are to be congratulated on the selection of this building, which could hardly be better adapted for their purposes had it been specially built for them.

The Pierce Sanitary Wood Work.

With the fine enameled iron goods, sanitary earthen ware and nickel plated furnishings used in the equipment of the modern bathroom, it is necessary that the wood work provided should be in every way in harmony with the fixtures and the tiled walls and floors. The Pierce sanitary wood work, which has been put on the market by the Pierce, Butler & Pierce Mfg. Company of Syracuse, N. Y., is said to have already gained a reputation for design, workmanship and finish, and also for durability in use. In Fig. 1 we present a view of the Pierce low down tank for flushing wash out and siphon jet closets. These are made in plain and quartered oak in different shades of color and quality of finish, and equipped for either push button, lever or pull. The Pierce closet seat and cover shown in Fig. 2 is made in plain and quartered oak, and in different styles of finish. Great care has been taken in selecting the materials and in the finish of these goods, and they are recommended highly to the plumbing trade.

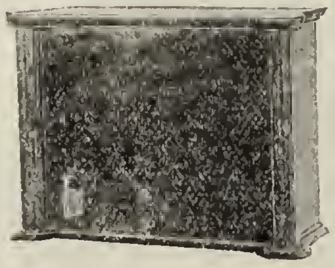


Fig. 1.—Low Down Tank for Closets.

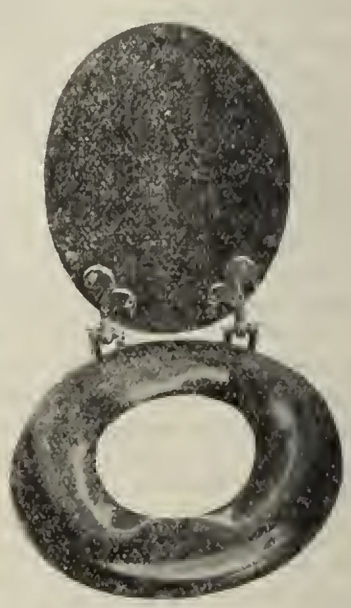


Fig. 2.—The Pierce Closet Seat.

The Pierce Sanitary Wood Work.

The Gurney Heater Mfg. Company, Boston, Mass., are calling special attention to their Heavy Duty Bright Idea Steam and Hot Water Heaters. These Heaters are of the vertical sectional type, and are made in a variety of sizes, adapted for carrying from 900 to 7000 square feet of direct steam radiation, and from 1500 to 11,500 square feet of direct hot water radiation. These Heaters are said to have passed through the winter with highly satisfactory results. Those who are called upon to install heating systems, where Boilers of large power are required, are invited to investigate the company's Heavy Duty Bright Idea Boilers.

TO PROMOTE EXPORT TRADE IN PLUMBERS' SUPPLIES.

A striking indication of the rapidly growing importance of the trade in plumbing fixtures and supplies is afforded by the latest move made in the direction of stimulating the export trade in this line of goods. As a result of many years' experience the manufacturers throughout the country have learned the futility of multiplying the source of manufacture. In view of the overproduction that inevitably follows, in time, when the demand again becomes normal after a period of unusually active business, the need of an outlet for their surplus product has been recognized by all the manufacturers of plumbers' goods. To market the same without disturbing the regular trade and creating a war of prices, which is usually ruinous to the majority of the manufacturers, has been one of the most important problems of the trade.

Many attempts have been made to create a market for these goods abroad, but they have only resulted in partial success in some lines, while absolute failure has been met with in others. This has been due primarily to the lack of experience in handling foreign trade and ignorance as to the requirements of the foreign buyer. Inexperienced salesmen, representing various and often incongruous lines, do not impress the larger buyers abroad with that confidence which is so necessary to the building up of a substantial business. It has become evident that this subject demands careful study and attention if our export business is to be built upon a stable and permanent foundation. With this object in view several large manufacturers of plumbing supplies have secured the services of H. H. Sommer, a man of well-known ability and long experience in this particular line, as their representative abroad to place their goods directly from the American manufacturer to the European consumer. Mr. Sommer, who, for the past seven years has managed the New York branch of E. S. Wheeler & Co. of New Haven, Conn., manufacturers of plumbers' fixtures and supplies, has severed his connection with that house in order to devote his time to the export trade. He will be found at 12 Cliff street, New York, until about June 1, after which date he expects to sail for Europe to enter upon his work there.

It is believed that the lack of success of American commission houses, who have been selling through foreign commission houses, may be obviated by direct personal representation. It is true that individual manufacturing concerns in the plumbing supply field have sent capable men abroad at large expense and have succeeded in securing a certain amount of trade. But the line is so diversified that no single manufacturer can hope, by his own efforts, to gain any very substantial results. In order to make a complete success, the kindred lines that together form a symmetrical whole must not conflict, and the cost of selling these several lines must be reduced to a minimum of expense; in fact, so small as not to become a burden to the producer nor enhance the price of the goods. This condition would seem to be in the way of being met by the plan now proposed, which appears to be perfectly feasible and practical and which, moreover, holds out a promise of benefit to the American plumbing goods industry at large.

A Test of Heating and Ventilating Systems.

For some time past the authorities of the city of Buffalo, N. Y., have been endeavoring to learn the best method of heating and ventilating school buildings, where a large quantity of air is supplied to each pupil and a frequent change of air is made in the building. This has resulted in the arrangement of a contest between heating systems designed by Professor S. H. Woodbridge of the Massachusetts Institute of Technology, and the Buffalo Forge Works of Buffalo, N. Y. The system which will represent the Buffalo Forge Works in the test is installed in Public School No. 16 or 19, in Buffalo, and the system representing the ideas of Professor Woodbridge is now being installed in School No. 42 in that city. Professor R. C. Carpenter of Cornell University and William Kent of New York have been recommended as judges, and whichever system proves the more satisfactory, the City of Buffalo will receive a contribution of $2000 for charitable purposes. Such a contest of efficiency of blower heating and ventilating systems will be of wide interest, and cannot be other than beneficial to this branch of trade.

Ideal Boilers.

The American Radiator Company, whose general offices are in Chicago, with branches in New York, Buffalo, Philadelphia, St. Louis, Minneapolis and Denver, have issued a revised and greatly enlarged catalogue of their Ideal line of steam and hot water boilers. This catalogue is an exceptionally fine piece of work. The pages are large, enabling good sized cuts to be used. The illustrations are of the most artistic character, reflecting the latest development in the engraver's art. The type is large, thus enabling it to be easily read by everybody. In every other respect the utmost care has been taken to secure a book which will be preserved for its beauty as well as for the intrinsic value of its contents. The company, as usual in their publications, conspicuously lay down their policy. This policy avoids under any circumstances the furnishing of estimates of the cost of a heating plant for owner, architect or heating contractor, and also avoids the making of piping plans for anybody. It is the company's aim to deal only with those regularly established in the trade and with experienced, progressive and responsible heating contractors. The introductory pages further call attention to the high character of the material used in the Ideal boilers and to their scientific construction. They set forth the fact that in each of their various types of boilers every line has been laid and stands for one purpose, which is efficiency. The manufacture of these boilers is conducted on the interchangeable system, so that extra sections or parts may be ordered with a certainty that they will assemble perfectly.

The boilers illustrated comprise the Ideal Sectional 36-inch for steam and water; the Ideal Sectional 24-inch, steam and water; the Ideal 18-inch, steam and water; the Ideal 12-inch, steam and water; the Ideal Premier, steam and water; the Ideal Premier for soft coal; the Ideal Portable, steam and water; the Ideal Invincible, steam and water; the Ideal Premier Junior, water; the Ideal Junior, water; the Ideal Junior, steam, and the Ideal Sectional tank heater.

The sectional boilers are those constructed with vertical sections, which permit the installation of boilers of large capacity in low cellars. The largest parts may easily be taken through doors or windows, thus making them much more convenient to install than boilers of tubular construction. The principle of construction secures a liberal steam space above the crown sheet for the thorough disengagement of the steam. The sections employed have a large amount of everhanging heating surface in the fire pot. Perfect circulation within the boiler itself is secured. This heating surface is particularly effective when it is desired to use soft coal for fuel. Two small caps on either side of the fire door cover openings made for the purpose of introducing a coil of pipe over the fire, which offers a means for economically supplying hot water in apartment buildings or dwellings through the season when the heating apparatus is in use.

The method of connecting the sections with tapered push nipples is adopted in preference to the use of headers at top and sides. An extra large nipple is employed in the steam boilers to provide a liberal and open steam dome at the top of the boiler. These push nipples are made of cast iron of the same material as the sections, and in consequence the efficiency of the joints is in no way effected by expansion or contraction. The fire pot used in these sectional boilers is of unusual depth, considerably beyond that of boilers of similar type, giving greatly increased fuel capacity and allowing for the operation of the boiler for an extended period of time without attention.

The Ideal Premier, Portable and Invincible are boilers of circular type with horizontal sections. The Ideal

Premier has a center column connected with the sides by radial arms to secure perfect circulation within the boiler itself. This boiler is especially adapted to the use of soft coal as fuel, but the same construction is furnished with sections of special design to give best results with hard coal. The Ideal Portable boiler has a waterway at the side, through which the water rises from the fire pot and intermediate sections to the steam dome or top section in which the water line is carried.

The Ideal Invincible boilers are made from entirely new patterns. Around the fire pot and in the first section above it provision is made for the thickest water space. Liberal waterways are provided at the side through which water rises from the fire pot and intermediate sections to the steam dome. At the back of the boiler another waterway connects the dome or top section with the fire pot, passing through but having no connection with the intermediate sections. Perfect circulation is thus provided within the boiler itself, this being a feature which insures a steady water line and a constant supply of dry steam. The sections are connected with cast iron tapered push nipples. The smoke flues are staggered so that the products of combustion do not escape in a direct line to the chimney. The heated gases thus impinge upon the under side of every section. The Invincible is offered as an exceedingly economical boiler in the consumption of fuel. The Junior water boiler and tank heaters are intended for a limited amount of radiation, or for heating water for tanks or other purposes requiring large quantities of hot water.

New York City Notes

Samuel Shleman, an unlicensed plumber of 63 Mott street, was convicted last Monday in the Court of Special Sessions of doing plumbing work without a certificate of competency in the premises at 16 Pell street. Presiding Justice Hinsdale said that the court would do all in its power to break up the practice of unauthorized persons doing plumbing in tenement houses. The complainant was William Lockwood, clerk of the Master Plumbers' Association.

* * *

The Building Department is taking active measures against unregistered and unlicensed plumbers, and compelling those of the latter class to take in their signs and plumbing displays.

* * *

Reynolds & McMahon have the plumbing in a large eight-story apartment house at Park avenue and Eightieth street. William H. Quick has two high class private houses on Seventy-ninth street, east of Fifth avenue. Rossman & Bracken have a long spell of work ahead in Senator Clark's mansion at Seventy-seventh street and Fifth avenue. James Armstrong has a private house at 33-35 East Seventy-fourth street, and John Renehan has one opposite at 46 East Seventy-fourth street. J. J. Welstead is doing the store, office and studio building on Fifty-ninth street, between Fifth and Madison avenues.

* * *

Plumbers doing business in other than their own boroughs must obtain certificates of registration from their own Bureau of Buildings, which must be filed with the Bureau of Buildings in the borough where they are doing work.

* * *

The Examining Board of Plumbers is keeping up its work. fully the average number of men having applied for certificates last month.

* * *

Several changes have been made lately in the plumbing rules and regulations of Manhattan, the most notable of which condemns mechanical and interior partition traps, changes the rules governing the fresh air inlet and gives rules for flushometer closets.

* * *

There will doubtless be a boom in tenement house building now that the amendments to the tenement house law have been finally settled so that the provisions governing tenements are not prohibitory to speculative builders.

* * *

The many friends of B. F. Donohoe will be pleased to learn that he is getting over a severe attack of his old enemy—rheumatism—and hopes to be out and attending to business shortly.

Heating and Plumbing Notes.

The Plumbing and Steam Supply League team have done some fine bowling in the Business Men's Championship Tournament notwitstanding they have lost two series with their hardest competitors. On Monday night they were not to be denied and with scores of 872 and 856 they won two out of three games, Good contributing 222 and Wilson 213 in the first game, and Good 196 and Maurer 180 in the other game. The arrangements for the contest with the bowlers of the Boston supply trade are still pending. Captain Beach of the New Yorkers awaits the pleasure of Oscar Saxe, who has charge of the interests of those who bowl under the sign of the sacred codfish.

Vincent Fortune, clerk of the Board of Commissioners of Cascade County, Mont., will receive bids at Great Falls until April 21 for a heating and ventilating plant in the court house under course of construction at Great Falls.

Circulars describing the use of the patent Plumbers' Force Pump manufactured by John H. Lawless, 184 Third street, Jersey City, N. J., are being distributed to the trade, which not only show that the Pumps are used by prominent plumbers all over the United States, but also explain how profit may be derived from their possession and use.

F. N. Du Bois & Co, Twenty-fifth street and Ninth avenue, New York, have secured the Eastern agency for the Temple Vent Fittings, made by the Oliver Schlemmer Company of Cincinnati, Ohio. The house now can furnish these labor saving Fittings to the trade in Pittsburgh and Buffalo and the East, adapted for cast iron pipe, or with screw connections for wrought iron vent pipes. These Fittings are said to effect a substantial saving in time as well as in cost in erecting a plumbing system.

The Steel Clad Bath Company of New York have sold out their interests to the John Trageser Steam Copper Works of 437 West Twenty-sixth stheet, New York. This concern have been the manufacturing agents of the Steel Clad Bath Company ever since their formation, and can therefore guarantee to the trade perfect satisfaction as to quality and delivery of these well-known goods.

New Firms and Changes.

The M. J. Daly & Sons Company have been incorporated at Waterbury, Conn., with a capital of $50,000, to install heating apparatus and fire extinguisher systems, and to do a general plumbing business.

The Lowell Windmill Mfg. Company, Salina, Kan., have been recently organized. A plant will be erected at once and will be equipped for the manufacture of a patented Mill, the invention of G. S. Lowell. Later on they propose to take up the manufacture of Pumps, Tanks and Irrigation Supplies. The officers are G. S. Lowell, president; Alfred Lowell, vice-president; M. Lowell, secretary, and A. F. Wolff, treasurer.

C. T. Gordon, J. T. Gustin and C. S. Sheahan have entered into a partnership in the plumbing business at Des Moines, Iowa.

George L. Beitner has purchased the plumbing stock and fixtures of the late Theodore Fox, and will conduct a plumbing business at the old stand, 273 State street, Bridgeport, Conn.

The Oliver Schlemmer Company have been incorporated at Cincinnati, Ohio, with a capital of $25,000 to succeed Oliver Schlemmer in the manufacture of the Temple Vent Fittings, and the O. S. Distributing Fittings for hot water heating. The new corporation will have increased facilities and transact their business on a larger scale.

THE TIN HOUSE WAGE SCALE.

There is just a possibility that the plans of the American Tin Plate Company for the continuous operation of their mills this summer, based upon the agreement with the Amalgamated Association of Iron, Steel and Tin Workers, may be frustrated after all by a possible refusal of the tin house men to approve the proposition of the Tin Plate Company to continue the present wage agreement for another year from July 15. The Executive Board of the Tin Plate Workers' International Protective Association has decided to submit the matter to a referendum vote of the lodges, the result of which will probably not be known until the annual meeting of the association at New Castle, Pa., early in May. There are some indications that the tin house workers are by no means a unit on the subject of approving the Tin Plate Company's proposition, although it is considered likely that the majority of the members will realize the advisability of so doing. Meanwhile the American Tin Plate Company are approaching the season at which they will be closing their important contracts with the canning interests and other large users of tin plates during the summer. They are naturally desirous, therefore, of placing the question of the possibility of a strike of any kind beyond peradventure.

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Peden Iron & Steel Company.

The March number of the *Southern Industrial and Lumber Review* of Houston, Texas, contains a very interesting illustrated article of several pages on the Peden Iron & Steel Company of that city. Portraits of the members of the firm, with exterior and interior views of their warehouses, store, offices, &c., are presented, together with a detailed account of the history and business of the house. The Peden Iron & Steel Company were incorporated this year to succeed the old firm of Peden & Co. The concern have made a splendid success during their existence of less than 12 years, having built up the business from a very modest beginning to its present commanding position. The company carry a very varied and extensive line of goods, including black and galvanized sheets, tin and terne plates, metal and composition roofing and roofing materials of all kinds, tinners' and roofers' tools and supplies, metal ceilings, conductor pipe, eave trough, elbows, stoves and furnaces, pipe, valves and fittings, belting, nails, wire, hardware, tinware, tools, and many other goods of like character. They are now preparing a catalogue covering all the lines of goods carried in stock, which will be ready for distribution at an early date.

Steel Plant for Sheet Mills.

Three of the independent sheet mills, these being Laughlin Nail Company, with sheet mills at Martin's Ferry, Ohio; Whitaker Iron Company, Wheeling, W. Va., and Maryland Sheet & Steel Company, Cumberland, Md., have bought the open hearth plant formerly operated by the Burgess Steel & Iron Company, at Portsmouth, Ohio, but which was taken over by the Crucible Steel Company of America. The plant contains nine gas heating furnaces, two annealing furnaces, one pair furnace, six turns of rolls, a 4-ton hammer, four Swindell open hearth steel furnaces of 30 tons capacity each. It is the intention to overhaul the plant and add probably two more furnaces and a bar mill, and roll sheet bars. It will probably be 60 days or longer before the plant is ready for operation.

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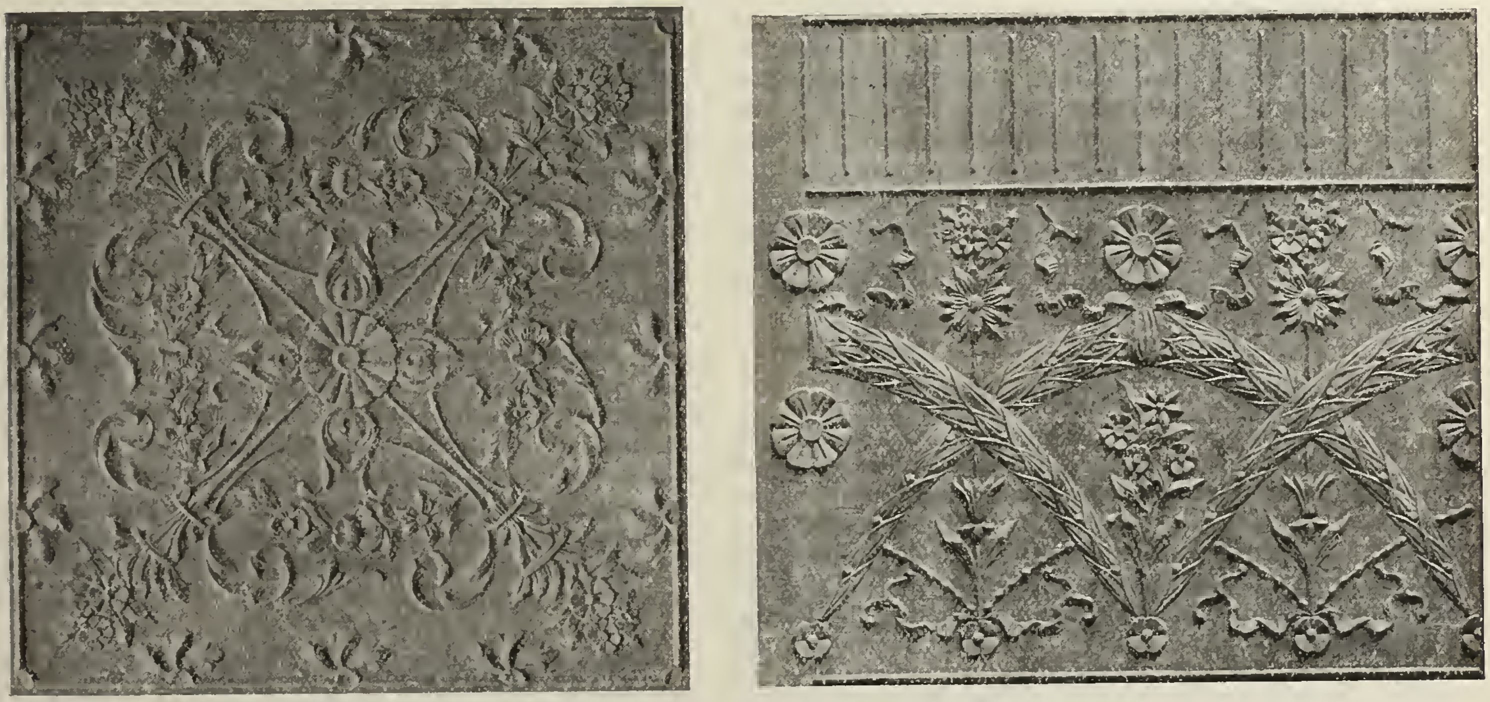
Decorative Stamped Ceilings.

In the illustrations herewith are shown examples of the line of stamped steel ceilings that are being produced by the L. H. Solosth & Sons' Stamping Works, Grand Rapids, Mich. These samples represent two of the latest designs in these goods made by the concern, who also manufacture an extensive line of sheet metal ornaments and statuary.



Decorative Stamped Ceilings.

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Tinware and Tinsmiths' Tools in China.

In an article on the possibilities of trade with China a writer in the *British Trade Journal* has the following remarks regarding tinware and tinsmiths' tools in that country:

Cheap unglazed earthenware in a great measure takes the place of tinware in other countries. The tin that is used for small household articles is made up by hand, with the aid of a pair of shears and a soldering iron. Of course, there is a considerable amount of tin plate imported, and the thousands of kerosene tins that pass through the hands of the hawkers also find their way to the tin shops. There is no canning industry among the Chinese. All of their sauces and compotes are preserved in earthenware jars, or in old wine and beer bottles. What tools they have are very crude, and are made locally at a small price, and there are no shops that make a business of dealing specially in them.

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M. M. Garland, formerly president of the Amalgamated Association of Iron, Steel and Tin Workers, has been reappointed Surveyor of the port of Pittsburgh.

German Sheet Iron Syndicate.

Toward the end of last month there was formed a syndicate of the manufacturers of sheet iron in Germany, in the shape of a limited liability company, under the title Verband Deutscher Feinblechwalzwerke, composed of 46 sheet works. These include all the firms in Germany that manufacture sheets, with the exception of about three or four. These latter, however, are said to have pledged themselves not to increase their present production of sheets, and to co-operate with the syndicate, so far as prices are concerned. It will be a problem to the new syndicate to market the present enormous production of about 350,000 tons of sheets at home and abroad, the value of this output being about $12,000,000. The syndicate acts as the buyer of the product of the associated works, receiving the total output and selling the same to dealers and consumers, under the supervision of a committee of the mills. Thus direct dealings between the manufacturers and consumers will stop.

The syndicate has been arranged for a period of three years, but it may be dissolved at any time by a simple majority vote, whenever the whole sales of the outside works increase to 10 per cent. The selling agency of the syndicate will closely watch developments in the world's markets and will sell for export according to the position of the home market, so that the constituent mills may have a regular satisfactory amount of work. It is expected that the financial position of the various sheet mills will be very much improved by this consolidation. Until now they could not obtain advantageous prices for their product, owing to the sharp competition existing between them. The establishment of this powerful syndicate is regarded as one of the most important events in the history of the German iron industry.

Elbow and Skylight Patterns.

While elbows of sheet metal have been made since the establishment of the first tin shop, there is almost as much trouble in securing correct patterns for them in some tin shops as there is in securing patterns for skylight bars of different styles. G. L. Gray, 840 North Cedar street, Galesburg, Ill., is offering for sale the Perfect patterns for both elbows and skylights. The Perfect elbow patterns are on heavy blue print paper, and are in two sets. Set A is for elbows from 1 inch to 20 inches in diameter, and for 2, 3, 4 and 5 piece elbows. The sheet is 24 x 68 inches in size, and contains 80 patterns. Set B is for elbows from 20 to 40 inches in diameter, made in 5, 6, 7 and 8 pieces, including 80 patterns in all. In use, it is only necessary to lay the blue print on the tin or sheet iron and prick through on the pattern line every inch or two, after which the pattern is laid aside, and the elbow is cut on the pricked or marked line.

The Perfect skylight patterns include hip skylights, gable skylights, single pitch skylights, and chart for obtaining the length of skylight bars. They are also made on heavy blue print paper and for use are laid on the material and the pattern marked off by means of a prick punch. The suggestion is made that the best way to preserve these blue print papers from dust and from being torn is to keep them in a tin case with a tight cover, when they will last a lifetime. Mr. Gray issues circulars which can be secured on application, fully explaining the desirability and use of the different patterns he has for sale.

The American Solderless Can Company were incorporated this week at Trenton N. J., with an authorized capital of $5,000,000. It is announced that this company have secured the American rights to the use of patents covering a Sanitary Can manufactured and controlled by an English company. It is reported that the American Can Company will control this new concern and also the Packers' Sanitary Can Company, recently incorporated in New Jersey, with a capital of $500,000. Lawrence A. Norton recently resigned as auditor of the American Can Company in order to take up the work of the development of a market for the improved Can.

FLASHINGS.

M. J. Brunton & Son, Springfield, Mass., are roofing the new ice house of the Boston & Albany Railroad Company in West Springfield, and the addition to the building occupied by Meekins, Packard & Wheat. They have also the contract for roofing the West box shop. The roofing of the new building of the Hartford Foundry Company in Hartford, Conn., has just been completed by them.

The New York Metal Ceiling Company, New York City, have secured the contract for placing the Metal Ceilings and Sidings in the new Government buildings at Fort Mansfield, Watch Hill, R. I. The contract covers 20,000 feet.

The rolling mill and Steel plant of the American Rolling Mill Company at Muskegon, Mich., will shortly be placed in operation again. The company's Black Plate mills were sold some little time ago to the American Tin Plate Company, and the rest of the plant was shut down temporarily.

R. Wilson & Son, Springfield, Mass., have the contract for the metal work on the new block in course of erection for Gagnier & Angers on Seventh street, Springfield.

The Carnegie Sheet Company of Pittsburgh, Pa., have plans prepared for the erection of a six-mill Sheet plant at Carnegie, Pa. The company also contemplate the erection of an open hearth Steel plant.

It is reported that the Whitaker Iron Company, Wheeling, W. Va., are about to add two additional Sheet mills to their already extensive plant.

The Fred. J. Swaine Company, St. Louis, Mo., are exceedingly busy on orders for Presses and Dies, their facilities being taxed to the utmost to get out the work on their books. The company are constantly adding to their line, their most recent additions being a new Drop Hammer, a 60-inch Slitting Machine, a new Double Seamer, and a new No. 35 Power Press.

The Marietta Sheet Steel & Tin Plate Company, recently incorporated under the laws of West Virginia, with an authorized capital of $300,000, have purchased a tract of land at Norwood, a suburb of Marietta, Ohio, where they propose to put up a large Sheet and Tin Plate plant.

Beseman & Boswick, Hartford, Conn., have secured the contract for Skylights, &c., on a block which is being erected in New London for John Gorton. They have just completed the contract for quite a large amount of work on the High School Building on Hopkins street, Hartford.

The Monarch Iron & Steel Company of Pittsburgh, recently incorporated under the laws of the State of Delaware with a capital stock of $100,000 to erect a mill at Parkersburg, W. Va., for the production of Planished Iron Sheets, were incorporated by Thomas C. Perrine, F. M. Whippo and S. M. Mease. The company are preparing to proceed with the erection of their plant at once.

In order to accommodate their increasing business, the Rockford Can Company of Rockford, Ill., will move from their present quarters to the Spafford Building on North Madison street.

F. R. Phillips of the F. R. Phillips & Sons Company of Philadelphia, Pa., sailed last week for Europe, where he will remain for some months in the interests of the business of his company. Mr. Phillips expects to close several contracts for the installation of American labor saving machinery for steel plants and rolling mills.

The offices of Goff, Horner & Co., Limited, sales agents for the Muskingum Valley Steel Company, makers of Steel Sheets and also factors in Pig Iron and Steel, have been removed from Lewis Block to the Frick Building, Pittsburgh, Pa.

The American Tin Plate Company are building an experimental Sheet rolling plant at the Monongahela works.

Two additional open hearth steel furnaces are being built at the Vandergrift plant of the American Sheet Steel Company.

The London *Ironmonger* announces the probability of a combination of a number of British Steel, Sheet and Tin Plate manufacturers into one powerful consolidation, which is calculated to control the manufacture of Sheets and Tin Plates in Great Britain, from the iron ore to the finished product. It is said that the new company will probably be incorporated under the name of Baldwins, Limited.

The Cadwallader Tin Plate & Metal Company of Pittsburgh, Pa., have purchased from George A. Cadwallader a lot at the corner of Elizabeth and Gloster streets, Hazelwood. The lot measures 120 x 128 feet and contains a number of frame buildings. It is understood that the purchase was made to afford room for an addition which the company will make to their present plant this spring.

The General Fireproofing Company, recently organized at Youngstown, Ohio, will locate their plant on Crab Creek, in Youngstown. This concern are successors to the International Metal Lath Company, and will manufacture Herringbone Expanded Steel Products. The officers of this concern are Myron I. Arms, president; A. P. White, vice-president; George D. Wick, vice-president; W. H. Foster, secretary, and W. A. Kingsley, treasurer and general manager.

The Elaterite Roofing Company, Denver, Col., are sending out circulars relative to their Elaterite (mineral rubber) Roofing. One circular gives specifications for laying the Roofing, another describes the four grades in which it is made, while a third illustrates some of the buildings, institutions, &c., upon which it has been used. Their special grade of the Roofing is made with two layers of cloth, consisting of a canvas center and cloth top, Elaterite roofing material, mica surface and paper back.

A press dispatch from Green Castle, Ind., reports that ground has been broken for the foundation for the new Juniata Tin Plate mill, which is to be built there this summer by a company recently organized with a capital of $250,000. Sidings are to be built from the Vandalia Railroad to the mill site, and as soon as these are completed the material for six mill buildings will be rushed and their construction begun. The mill, it is said, will be one of the largest in the country, run on independent lines.

How to Increase Trade in Germany.

Charles Neuer, United States Consular Agent at Gera, submits to the State Department the following suggestions as to the best methods of increasing American trade in Germany:

Our goods, he says, would experience an enhanced sale in many lines if they could be bought directly from stock kept on hand in foreign countries. This is especially true of articles not yet well known in the world's markets or which will come from manufacturers who have transacted but a limited business abroad. The long time necessary to obtain goods from the United States is an obstacle to our trade. Sometimes it takes three months from the date of order until the goods are received. If foreigners had the opportunity to see our superior articles and to get them at a reasonable price within a few days, sales would be much more easily effected.

There is a great conservatism in trade here, and many merchants will not change their sources of supply, unless they can do so without difficulty and delay. Others confine their purchases to such quantities as are needed for immediate use. In all these cases a permanent stock in the principal centers of trade would be the best means of successfully introducing our goods. Warehouses with great varieties of articles are doing an excellent trade here. To secure the best results, concerted action and systematic effort on the part of our exporters are needed.

A press dispatch from Townsend, Del., says that John C. Haines of New York has discovered graphite on his property at Townsend. The vein is said to average 8 feet in thickness.

THE LETTER BOX.

Inquiries in regard to practical questions of general interest are invited, in reply to which we shall be glad to receive suggestions and information from our readers.

Correspondents are requested in all cases to give their names and addresses, which will not, however, be published or disclosed without their consent.

WHAT MAKES THE TORCH BLOW?

From Curiosity, Philadelphia, Pa.—Will some reader of *The Metal Worker* give me a remedy to stop the new nickel plated brass alcohol torch shown in Fig. 1 from constantly throwing the alcohol out through the top of the wick? The old torch shown in Fig. 2 did not do this, but the new ones do it so badly that even when the alcohol is but one-third of the distance from the bottom they throw it up and out, even with the cap on the torch. In using the torch lit with the fire on the wick the surplus alcohol flows down the outside of the new torch, taking fire there and is very apt to burn the workman who may be using it. The old flaring pattern of torch never did this, unless filled too full, but in my experience the round torch always does it. I would be glad to have some reader of *The Metal Worker* state the cause and the remedy.

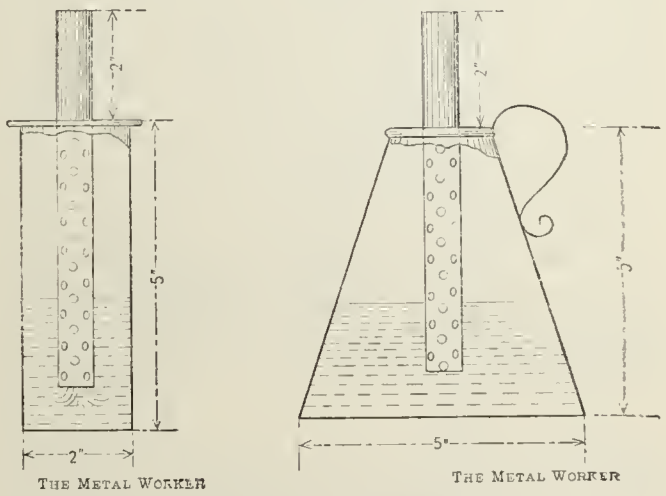


Fig. 1.—The New Torch. *Fig. 2.—The Old Torch.*

What Makes the Torch Blow?

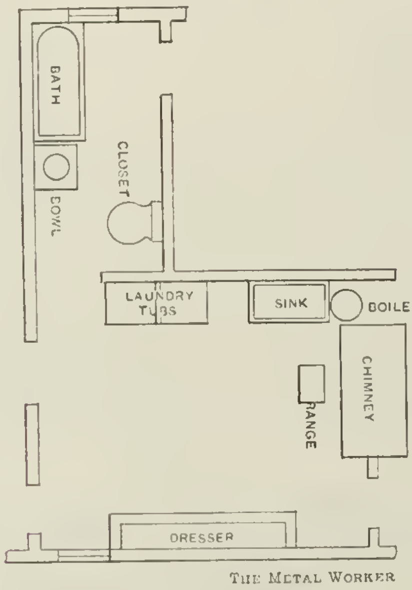
WHAT CAUSED THE FIRE?

From Thomas Hyde, Albany, N. Y.—In regard to the fire reported by "J. B. E." in *The Metal Worker* of March 22, I would say that at first thought it seemed to me that the burning mentioned could not have happened, but on second thought that it might be possible. In the first place the furnace is set with a view to heating by rotation of the air in the building, and the air to be heated is in separate compartments. I fail to see how rotation of heat can be had in any quantity above the furnace, except from the air that may squeeze through crevices in the compartment in which the furnace is located. On passing through the 2½-inch holes in the casing some of the air would creep up next to the casing and absorb practically none of the radiant heat of the furnace. It is a well-known fact that radiant heat moves very slowly through space, consequently the heat is retained in the space surrounding the furnace. I believe that had the sheet iron, which is a splendid conductor, not been placed on top of the asbestos there would have been less liability of burning. A good fresh fire will furnish plenty of heat at the base of the furnace. I would advise a cold air box to the furnace and a reduction of the space between the stove and the casing of at least 12 inches in the diameter of the casing, and I would take out the iron and asbestos and lay a course of brick.

From the Robinson Furnace Company, Chicago, Ill.—Answering the query of "J. B. E." in *The Metal Worker* of March 22, as to what caused the fire, would say that the fire, no doubt, was caused, first, by insufficient protection under the furnace, and, second, by air supply being too small. We have known of furnaces set on a layer of brick and cement on wood floors that have set fire to the floor by heating through the bricks. In our work we make a practice of cutting the basement floors out and starting the foundation on the ground beneath. If the furnace is on the main floor of the building we always aim to use hollow tile. This, we think, is the only safe method, as heat from the fire pot radiates downward to a much greater extent than might be supposed, and the brick under the furnace will get very hot, especially when a fresh fire is built.

PLUMBING A TENEMENT.

From A. O. B., Livermore Falls, Maine.—Will some of the readers of *The Metal Worker* explain their way of piping a four-tenement house, when the bathrooms are over each other, two on each side, and arranged as shown in the plan herewith? The piping must be laid under the floor and arranged to drain out independent of each other. Can they be drained into the same trap by means of a stop and waste?



Plumbing a Tenement.

ROOFING MATERIAL FOR FOUNDRIES.

From J. Callaghan & Co., Cleveland, Ohio.—We shall be glad to hear through *The Metal Worker* of the experience roofers have had with the different kinds of material for foundry roofs, particularly as to the satisfaction given and the durability of the material. We shall also be pleased to hear from the manufacturers and receive samples of the roofing material which they recommend for this class of work. We desire to learn something that can be guaranteed for at least ten years.

PUMP IS NEEDED.

From C. B., Bellaire, Ohio.—I have in my yard an artesian well 133½ feet deep. The water comes up to the top of the 6-inch curbing in the wall, but 2 feet 8 inches from the top of the pipe, which is about 10 inches higher than the ground. Can *The Metal Worker* tell me some way by which I can siphon the water out of the well? I often use siphoning for emptying tanks, barrels, &c., and have tried to siphon the water out of the well, but have failed, and would be glad to learn of some way of accomplishing what I desire.

Answer.—A siphon can only be used when the discharge end, or long leg, of the siphon is lower than the inlet end, or the short leg of the siphon. If the well were on a hillside so that a pipe could be carried down the hill some distance below the surface of the water in the well, there would be no difficulty in siphoning the water out of it. If the water is desired at a higher level than that of the well it must be lifted, which can best be done by means of a pump.

ARE PIPES AIR BOUND?

From D. F. N., New York.—In reply to the letter of "E. J. F.," in *The Metal Worker* of March 22, in my opinion, from the way he explains and shows his piping system, the falling main from the tank has become air bound at the foot. A better way to arrange a horizontal pipe under the floor or ground would be to give a slight fall to the pipe all the way down to the elbow, where it rises to the basin riser, instead of having it pitch the other way. Now when the water falls from the tank the air is trapped and held in the pocket below, until it is forced ahead of the water and escapes through the rising pipe to the basin. The discharge pipe from the tank should be located at the top. I would also suggest the placing of a pet cock on the barn rising pipe at a point where it can be opened to allow air to escape. The trouble with the telltale pipe must be where the water enters into it at the top, for if it has a slight pitch upward it would become air bound and stop its operation.

PROTECT TANK PIPES FROM FREEZING.

From J. F. K., Winooski, Vt.—In answer to the inquiry of "S. & S." in *The Metal Worker* of February 8, I would say that I have had considerable experience with tank supply pipes freezing, and am working in a much colder region than either "S. & S." or "W. J. M.," who describes his method of protecting the pipes in *The Metal Worker* of March 15. I was called upon to thaw out the tank pipe leading up a 60-foot tower to a 30,000-gallon tank at the top. The pipe leading to the fire extinguishers was 6 inches in diameter. It was cased substantially as "W. J. M." suggests, but contained a 5-inch air space, and was made of good ⅞-inch spruce, tongued and grooved and well protected by paper, and still the 6-inch pipe froze as solid as the rock of ages. If "W. J. M." will run a line of ¾-inch steam pipe inside of the water pipe, and connect a ¾-inch steam valve at a convenient point and file out a good notch in the seat, to insure against its being shut off tight, and let the steam spit over the tank, I think he will have a job that will not freeze.

WILL THE SIPHON WORK?

From A. E. O'T., Clinton. Mass.—The reply to "A. W. K." in *The Metal Worker* of March 29 corresponds with what we find to be all right in our practice. We would like to change the measurement of the well from 14 feet deep to 37 feet deep, with the water never more than 2 feet deep in the well, and inquire whether the siphon would work under those conditions?

Answer.—A siphon would not work under the conditions presented. The action of the siphon is governed by the atmospheric pressure, and whenever all pressure is removed from the long leg of the siphon the pressure of the atmosphere on the body of water in which the short leg is immersed will theoretically raise it to about 34 feet at the sea level. If the well was 37 feet deep with but 2 feet of water in it, it would be necessary to raise the water 35 feet. Under some conditions of the atmosphere and with a perfectly tight siphon tube siphonic action might occur, but it could not be depended upon under such a great lift in general use.

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There has been recently a revival of interest in Congress concerning the so-called Babcock bill, providing for reductions in the rates of duty upon the metal schedule of the tariff law. But at the same time a development has occurred which experienced observers believe will effectually dispose of this measure, so far at least as the present session of Congress is concerned.

The *Commercial and Financial Chronicle* has issued its final report on the gross earnings of the railroads in the United States for the calendar year 1901, the results covering 179,000 miles. The total was $1,603,911,087 in 1901, as compared with $1,454,922,185 in 1900, an increase of 10.24 per cent.

TRADE REPORT.

MARKET SUMMARY.

Pig Tin is quiet and firm.

Copper is dull and unchanged.

Pig Lead is unchanged and steady.

Spelter is quiet, but firm on scarcity of metal.

Antimony is unchanged.

Nickel is without change in price and in good demand.

Aluminum is active at unchanged prices.

Tin Plates are quiet and firm.

Sheets are still in active demand and firm in price.

Foundry Iron is scarce and prices have an upward tendency.

Sheet Copper is in good demand and firm in price.

Sheet Zinc is without change.

Hardware is moving actively and prices are firm, with upward tendency in some lines.

Scrap Iron is somewhat less active and not so firm.

Scrap Brass and Copper are lower.

Plumbers' Supplies are in good demand; prices show much firmness.

Cast Iron Soil Pipe and Fittings have been advanced 5 per cent. in price.

Enameled Bathtubs, under new list, are about at former prices.

Wire Nails are active and firm.

Cut Nails are also in good demand with unchanged prices.

Window Glass is expected to advance 5 or 10 per cent.

White Lead is firm and in good demand.

Linseed Oil is in larger demand, with prices firm and unchanged.

Spirits Turpentine has been marked down about 2c. per gallon.

METAL MARKET.

New York, April 4, 1902.

Pig Tin.—Throughout the entire week the Pig Tin market was quiet and firm. Prices remain at about the same level as those quoted last week. Trading was not very active and was confined almost exclusively to small lots for present consumption. Business in futures was quiet, and speculative trading semed to be entirely absent. Straits Pig in small lots is quoted by jobbers at 27½c. to 27¾c. per lb. The statistics for Europe and the United States, as compiled by the New York Metal Exchange, show:

	Tons.
Total visible supply March 31, 1902	18,131
Against visible supply February 28, 1902	17,043
Against visible supply March 31, 1901	18,062

Copper.—The market remains dull with little business of consequence being transacted. While quotations are unchanged, the tone of the market seemed to be a little better. The report from Boston that one of the large Copper companies had refused to sell below 14c. had absolutely no effect upon the market, and was taken to be entirely without foundation. As a matter of fact, the impression generally prevails that Copper prices will before long seek a lower level and that no increase in activity is to be looked for until that time. Retail prices are without change, Lake Ingot in small lots being quoted at about 13¼c. to 13¾c. per lb., and Casting Copper 13c. to 13¼c.

Sheet Copper.—A very fair volume of business and inquiry is noted. Buyers of Sheet Copper, however, are not placing orders for extended deliveries. The business that is now being done is mainly in the line of supplies for present and early future consumption. Prices are firm on the basis of 18c. per lb. from store.

Pig Lead.—There is no change in the position of this metal. Business is of moderate proportions and prices are steady. American Pig in small lots is quoted at 4.45c. to 4½c. per lb. St. Louis advices report a fair volume of demand for Pig Lead with prices on a firm basis.

Spelter.—Scarcity of spot supply of the metal is the feature of this market at the present time. Business, however, is not of large volume, so the shortage of supplies has had no further effect than to stiffen prices without developing an actual advance over the figures given in our last report. Jobbers quote good Western brands in small lots at 4.60c. to 4.70c. per lb. St. Louis advices are to the effect that a considerable demand has shown itself in the market for Spelter at that point. Coming at this time, when stocks are light at the smelters, it has had the effect of advancing prices somewhat. It is said that most of the smelters are sold up well into May.

Sheet Zinc.—A moderate demand for Sheet Zinc is reported. Prices are unchanged at 6¾c. per lb. for 600-lb. cask lots, and 7c. to 7¼c. for smaller quantities.

Antimony.—This metal shows no change. Hallett's is quoted at 8⅝c. to 8¾c. per lb. in small parcels; U. S. at 8⅜c. to 8½c., and Cookson's at 10¼c. to 10¾c.

Nickel.—As stated in another column, all the Nickel interests, other than the Société Nickel of Paris, have been combined into the International Nickel Company. Prices are unchanged, small lots being quoted at about 55c. per lb.

Aluminum.—No change has taken place in prices or in the volume of business, which continues good. Small lots of No. 1 Ingot guaranteed 99 per cent. pure are quoted at 37c. per lb., and 100-lb. lots at 35c.

Tin Plates.—No change has developed in this market since our last report. So far as large business is concerned, the market presented a quiet appearance. It is said, however, that all the mills are still busy turning out product to fill orders placed some time since. Before long it is expected that the can makers and some of the other large consumers will place their season's contracts. The market has a very firm appearance. The prospect of a continuance of operations at the mills by the agreement reached with the Amalgamated Association has imparted additional steadiness. Jobbers report a rather larger run of orders from small consumers during the week, owing to the advance of the spring season. Prices are without change. American Bessemer Coke Plates, IC, 14 x 20, are selling in small lots at about $4.85 to $4.95 per box at New York and corresponding points.

Sheets.—A good demand is noted for Black Sheets and a very large one for Galvanized. The mills all have a great deal of business on their books. Deliveries of Black Sheets are decidedly better, and it is said that they can now be had in from three to four weeks after placing the order. Some of the heavier gauges in Black Sheets, however, are still difficult to obtain. Prospects are extremely favorable for a continuance of a large business in Sheets during the summer and fall months, and manufacturers are doing the best they can to prepare for it. Jobbers quote No. 27 One Pass Cold Rolled Soft Steel Sheets at 3.85c. to 3.90c., and Galvanized Sheets at 70 to 70 and 2½ per cent. off the list.

Chicago advices are as follows: The demand for both Black and Galvanized Sheets seems to be increasing. Some of the independent mills are promising shipments of Black Sheets in 30 days, but they are rapidly filling their order books. The mills making Galvanized Sheets are not able to offer as early shipment. The supply of Heavy Sheets is still much below the requirements of the market. Jobbers quote small lots at 3.35c. to 3.45c. for No. 27 Black, and 70 and 5 for Galvanized.

Old Metals.—Consumers of Scrap Iron seem to be more fully supplied and the scarcity of this material is less pronounced. Consequently prices are not so strong. Demand for Scrap Brass and Copper is fair, and prices are slightly lower. Dealers are paying about the following rates for moderate sized lots, delivered at New York or corresponding points:

Heavy Copper	per lb. 10½c.
Light and Tinned Copper	per lb. 9 c.
Heavy Brass	per lb. 8 c.
Light Brass	per lb. 6½c.
Lead	per lb. 3¾c.
Tea Lead	per lb. 3⅜c.
Zinc	per lb. 3 c.
Pure Aluminum Sheet	per lb. 25 c.
Cast Aluminum	per lb. 20 c.
No. 1 Pewter	per lb. 16 c.
No. 2 Pewter	per lb. 9 c.
Tin Plate Scrap, per gross ton	.... to $5.00
Wrought Iron Scrap, per gross ton	$13.50 to 14.00
Heavy Cast Scrap, per gross ton	12.50 to 13.00
Stove Plate Scrap, per gross ton	9.50 to 10.00
Burnt Iron, per gross ton	7.50 to 8.00

THE PIG IRON MARKET.

CHICAGO.—The furnace companies in a position to do business for the remainder of this year have booked some good orders, quite a tonnage having been placed by the general foundry trade. Contracts have also been made for deliveries running into the first quarter of next year, the prices realized on these contracts being close to our maximum quotations. The demand for spot Iron is unabated, and anything in this way is taken up with avidity. Virginia No. 1 Foundry has sold up to $20.75, and Southern No. 1 to $20. We quote as follows:

Lake Superior Charcoal	$21.50 to $22.25
Local Coke Foundry, No. 1	19.00 to 19.50
Local Coke Foundry, No. 2	18.50 to 19.00
Local Coke Foundry, No. 3	18.00 to 18.50
Local Scotch, No. 1	19.00 to 19.50
Ohio Strong Softeners, No. 1	20.10 to 20.35
Southern Silvery, according to Silicon	16.90 to 19.15
Southern Coke, No. 1	16.40 to 18.65
Southern Coke, No. 2	15.65 to 17.15
Southern Coke, No. 3	15.15 to 16.65
Southern Coke, No. 1 Soft	16.40 to 18.15
Southern Coke, No. 2 Soft	15.65 to 18.15

PHILADELPHIA.—The week has brought no special developments in the Pig Iron market. Sales are made at all sorts of prices and under all sorts of conditions, so that, for the time being, uniformity is out of the question. Spot No. 2 Foundry is usually held at $20, but if deliveries are spread over the entire quarter it may be had, in some instances, at $1 less. For deliveries covering July to December, $18.50 to $19 is about as well as can be done. There is an impression that supplies may be considerably larger during the latter half of the year, but the amount of work in sight is so enormous that it would be dangerous to act on this impression. For the present the range of prices would be about as follows:

	Deliveries to July.	Deliveries July to December.
No. 1 X Foundry	$20.00 to $21.00	$19.00 to $20.00
No. 2 X Foundry	19.25 to 20.00	17.50 to 18.00
No. 2, Plain	18.75 to 19.00	17.00 to 17.50

PITTSBURGH.—The Pig Iron market continues strong. Consumers of Foundry Iron are buying heavily, and contracts have been made for deliveries running as far ahead as the first quarter of next year. We quote No. 2 Foundry at $19.50 to $20 for deliveries in the second quarter; while for delivery all through this year slightly lower prices are made.

CINCINNATI.—The Pig Iron market is in a state of suspension, so far as Southern brands are concerned. Those people who want Iron badly for immediate delivery are paying up to $2 per ton more than the $12. Birmingham basis. As to f.o.b. Cincinnati prices, those given below must be taken for just what they are worth. There is not enough spot delivery Iron in existence to make a market. What there is will sell on the basis of the maximum prices given herewith, or even higher. We quote f.o.b. Cincinnati as follows:

Southern Coke, No. 1	$18.85 to $19.60
Southern Coke, No. 2	18.60 to 19.10
Southern Coke, No. 3	18.10 to 18.60
Southern Coke, No. 4	13.75 to 15.25
Southern Coke, No. 1 Soft	15.25 to 15.75
Southern Coke, No. 2 Soft	14.75 to 16.25
Southern Coke, Gray Forge	13.75 to 15.50
Southern Coke, Mottled	13.75 to 15.50
Ohio Silvery, No. 1	19.50 to 20.00
Ohio Silvery, No. 2	19.00 to 19.50
Lake Superior Coke, No. 1	18.60 to 19.10
Lake Superior Coke, No. 2	18.35 to 18.60
Lake Superior Coke, No. 3	17.85 to 18.10

ST. LOUIS.—Owing to the continued scarcity of Pig Iron offered in this market, the recorded sales show a light amount of business. In the matter of prices, some fancy figures are said to have been paid for immediate requirements. No large transactions are to be noted at this time, and the price movement is often as high as $2 above our minimum quotations, but this is usually for small lots. We quote for cash, f.o.b. St. Louis, as follows:

Southern, No. 1 Foundry	$16.00 to $17.00
Southern, No. 2 Foundry	15.25 to 16.25
Southern, No. 3 Foundry	14.75 to 15.75
Southern, No. 4 Foundry	14.25 to 15.25
No. 1 Soft	15.75 to 16.75
No. 2 Soft	15.25 to 16.25

CHICAGO REPORT.

Scrap Iron and Steel.—While the demand is fair, the supply is growing larger. Cast Scrap keeps very firm. We quote dealers' buying prices for carload lots, Chicago delivery, as follows:

	Per net ton.
Country Wrought Scrap	$14.00 to $14.50
Machinery Cast	13.00 to 13.50
Malleable Cast	12.00 to 12.50
Stove Plate (free from burnt)	10.00 to 10.50
Burnt Iron and Grate Bars	8.00 to 8.50
Sheet Iron and Hoops	8.00 to 8.50
Plow Steel	11.50 to 12.00
Breaking Stock	.... to 11.00
Old Boilers—whole (Iron)	9.50 to 10.00
Old Boilers (Iron) cut in single Sheets and Rings	12.00 to 12.50
Old Gas Pipes and Boiler Tubes	12.00 to 12.50
Cast Borings	7.00 to 7.50
Turnings	11.50 to 12.00
Horseshoes	14.00 to 14.50

Old Metals.—Prices of Copper and Brass are easier. The demand is good, but consumers are now getting in cheaper Ingot Copper, bought some time back, and are bidding less for Old Metal. Dealers quote buying prices on small lots as follows:

	Per lb.
Copper Wire and Heavy	11⅛c.
Copper Bottoms	10⅛c.
Copper Clips	11 c.
Red Brass	11⅛c.
Yellow Brass	8¼c.
Red Brass Borings	8¾c.
Yellow Brass Borings	7¼c.
Light Brass	7 c.
Pipe Lead	3.75c.
Tea Lead	3.35c.
Zinc	3.05c.
Tin Foil	20 c.
Pewter, No. 1	16 c.
Pewter, No. 2	10 c.
Aluminum	20 c.

Old Rubber.—The demand is still light and prices are drooping. Dealers' buying prices are as follows:

	Per net ton.	Per lb.
Garden Hose	$25.00	.....
Air Brake Hose	42.50	.....
Rubber Shoes	....	6¾c.
Rubber Car Springs	....	5 c.
Inside Bicycle Tubing	....	22 c.
Outside Tubing	....	6⅛c.
Black Rubber	....	4 c.
White Rubber	....	8¼c.

Rags.—Dealers quote buying prices of good Country Mixed Rags, Chicago delivery, at 70c. to 75c. per 100 lbs. in any quantity.

Anthracite Coal.—A moderate movement is reported. The Anthracite Coal shippers have just issued their new prices, to take effect during this month. They have decided to make the same arrangement as that of last year—namely, giving a discount of 50c. per ton from the schedule price on all coal shipped in April, 40c. discount in May, 30c. in June, 20c. in July, 10c. in August and thereafter charging the full schedule. Prices are as follows:

	Grate.	Egg and Stove.
Chicago	$5.75	$6.00
Milwaukee, Wis.	5.75	6.00
St. Louis	6.20	6.45
Kansas City, Mo	8.25	8.50

THE BILLINGS CLAPP COMPANY of Boston, Mass., are manufacturers of the Simplicity Soldering Salts, which they especially recommend for the use of tinsmiths and canners and all who do soldering of this character. The product is offered in dry form. For use it is only necessary to mix 1 part of the powder with 3 parts of water. It is claimed that with the use of these Salts no acid or fumes are experienced. The further claim is made that the use of these Salts secures economy in the quantity of solder used. The Salts are put up in 1-pound packages.

THE HARDWARE TRADE.

Perhaps the most marked feature of the trade at present is the steadiness and strength of the market in standard lines. This is especially the case with heavy goods, in many of which the state of the raw material has recently added largely to their cost. Difficulty in obtaining the material has also contributed much to the upward tendency. In miscellaneous Shelf Hardware, in which the price of iron or steel is a matter of less importance, firmness has been given to quotations by the gradual advances which have been taking place in wages. With the continuance of prosperous conditions throughout the country the wage earners, even where there has been no concerted movement, are asking increase in wages, and in many cases the manufacturers have yielded to their demands, which have had added force from the difficulty which is experienced in getting skilled labor in many lines. The large demand on manufacturers, almost all of whom are running to their full capacity, is an influence which keeps the market firm and strong. This is a season at which the demands from the large houses naturally relax, as stock orders covering their principal requirements for the season were placed some time ago, and consequently there is only a moderate volume of new business coming in from this class of trade. Their sales, however, have been so large that many of them are finding it necessary to replenish stocks, and their supplementary orders represent a considerable volume of business. The large retail trade, whose business is valued by manufacturers, are buying liberally, as business in almost all sections is in excellent condition. The difficulty of getting goods is the cause of some inconvenience to merchants, as there are a number of lines in which a decided scarcity has developed. The first quarter of the year has ended, having made a great record, both in volume and in the general profitableness of business.

NOTES ON PRICES.

Enameled Bathtubs.—As mentioned in our last issue, the Standard Sanitary Mfg. Company of Pittsburgh, Pa., have issued a new price-list on Porcelain Enameled Bathtubs. This is known as Price-List D and supersedes all previous lists and quotations. The list was issued and took effect under date of April 1, 1902. The new quotations show a considerable reduction in the list prices on the Tubs. The reduction in the list averages about 33 1-3 per cent. It is believed by the company that in reducing their list prices a larger number of goods can be sold and used. It is believed that the previous list prices were excessive and afforded too much of a margin of profit to the plumber, who in many instances insisted on charging the full list price, which prevented the sale of this company's wares, as the lists used by other manufacturers were considerably lower on the same patterns, and in order to bring the goods within the reach of all buyers and consumers the new lists were adopted. New discounts have also been issued, which will make the goods net about the same as the previous quotations under the high lists. Another change which has been made in the list is the placing of all Tubs on the guaranteed list. Heretofore the Keystone, Leader, Crown, Ionian, Gotham, Economy and Empire Tubs were on the guaranteed list. The lists on these Tubs have been reduced to bring them to the same cost under the new discount as they were heretofore, and they are now classed and sold as guaranteed Bathtubs. The list on the Shawmut Tubs has been reduced to make the net price equal to that of the Keystone. It formerly was classed among the high priced guaranteed Tubs. The high grade and special pattern Tubs have also been reduced in the lists, and there has been a corresponding change in the discount to make them net the same as heretofore. The new list prices will be issued next week.

Cast Iron Soil Pipe and Fittings.—As a result of the meeting of the manufacturers of Cast Iron Soil Pipe and Fittings, which was held in New York City on March 27 and 28, new prices have been issued as follows:

	Discount.
2 to 6 inch Standard Pipe	50 and 5 %
2 to 6 inch Extra Heavy Pipe	60 and 7½ %
2 to 6 inch Fittings, Standard and Extra Heavy	65 and 10 %
7 to 15 inch Pipe and Fittings, Standard and Extra Heavy	50 %

It is stated that the change in the price was due entirely to the scarcity of Pig Iron and was not influenced in any way by the recent advances in the price of Iron. All of the manufacturers are covered for their entire wants, but, owing to the scarcity of the raw material, not more than two-thirds of them are running and turning out sufficient product to fill their allotment. No other change is expected for some time, unless the scarcity of Pig Iron continues.

Wire Nails.—There is little reason for complaint in regard to the trade in Wire Nails. Merchants have experienced a good deal of inconvenience on account of the difficulty in obtaining Nails as fast as the trade absorb them, and stocks in the New York Market generally are broken. The market has a decidedly firm tone. Small lots from store are quoted at $2.25 to $2.30 per keg.

Cut Nails.—The demand for Cut Nails is of such volume that the mills find difficulty in supplying at all promptly. An advance of 5 cents per keg in prices was made for April at a meeting of the manufacturers in Pittsburgh this week. The volume of business in the territory directly tributary to New York is regarded as very satisfactory. There is on the whole an increased demand for Cut Nails as compared with Wire Nails, notwithstanding the fact that there is so little difference in price. Small lots of Cut Nails from store are quoted at $2.30 per keg.

Window Glass.—A meeting of the Jobbers' Association and the combined Glass manufacturers will be held in New York on April 8, when it is expected that an advance of from 5 to 10 per cent. will be made in the price of Window Glass. The activity in building operations all over the country indicates a large demand for Glass later in the season. The Jobbers' Association quote a discount of 95 and 5 per cent. from store.

White Lead.—The demand for White Lead in Oil continues very satisfactory, and the prospects are for an extended use of painting materials of all kinds during the coming season. Quotations are firm and unchanged at 6½ to 6¾ cents per pound for retail quantities.

Linseed Oil.—The demand for Linseed Oil for immediate shipment has shown some improvement during the week. Less is heard of a possible advance in prices in the immediate future. Quotations are without change, City Raw in small lots being quoted at about 64 cents per gallon and Boiled Oil 2 cents advance on Raw.

Spirits Turpentine.—On March 31 the price of Turpentine at Savannah dropped 8 cents per gallon. Consequently, local quotations have varied greatly. The New York market, however, is now steady at about 49 to 49½ cents per gallon for small lots of Turpentine.

TRADE NOTES.

The Western Windmill & Hardware Company of Midland, Texas, have been incorporated, with a capital stock of $60,000, by T. J. Martin, George E. Cowden and E. J. Mumford.

The annual meeting of the stockholders of the Joseph Dixon Crucible Company of Jersey City, N. J., will be held on April 15. The stockholders have received notice that the last batch of an issue of bonds amounting to $500,000, which were floated when the company were reorganized, has been retired. The company are reported to have a surplus of about $1,300,000.

"How the Park Hotel Fire Could Have Been Avoided" is the title of a neat folder reproducing an article from the New York *Times* on the disastrous fire in the hotel named which is being distributed by the International Sprinkler Company of Philadelphia, New York, Providence, Charlotte, Chicago and Montreal. The article cites Edward Atkinson of Boston as the authority for the statement that the fire might easily have been checked and the grievous loss of life and property avoided if the hotel had been provided with Automatic Sprinklers. The International Sprinkler Company are controlled and managed by Clarke Merchant, president of Merchant & Co., Incorporated, of Philadelphia.

THE AMERICAN STEEL & STAMPING COMPANY of Lorain, Ohio, are reported to be negotiating with the Board of Trade of Danville, Ill., with a view to the removal of their plant to that place.

PEERLESS MFG. COMPANY, Louisville, Ky., a few weeks since took possession of their fine new plant, which is referred to as one of the largest, most modern and best equipped in the country devoted exclusively to the manufacture of Iron and Brass Fire Place Goods. Over 3 acres are under roof, thus assuring a capacity sufficient to supply the wants of the trade in the busiest season. The buildings are of brick, with roof of saw tooth construction, and every department is abundantly lighted. The entire plant is heated and ventilated by an elaborate exhaust system. Electricity is used for power, each department being operated independently. This obviates closing the entire plant in case of accident in one part, and enables the company when necessary to operate a single department extra time.

JUDD & LELAND, manufacturers of Bicycle Pumps and Sundries, a full line of Pieced Tinware, Sprayers, Cake Tins and Leather Cup Valves of all kinds, as well as Leather, Rubber, Asbestos and Special packings, have incorporated their business under the style of Judd & Leland Mfg. Company.

THE GLOBE MACHINE & STAMPING COMPANY of Cleveland, Ohio, have incorporated with $10,000 capital stock. Incorporators: W. F. Maurer, A. L. Maurer, Carl F. Schroeder, Charles Highley and J. C. Lower. They have recently moved into a new factory at 970-972 Hamilton street, and will do general machine shop and metal stamping business.

The Nickel Combination.

On Tuesday of this week the organization of the International Nickel Company was completed. The new concern are a consolidation of all the nickel interests in the world, with the exception of the Société Nickel of Paris, who are controlled by the Rothschilds. The new company have a capitalization of $9,000,000 common stock, $9,000,000 noncumulative 7 per cent. preferred stock and $10,000,000 of 5 per cent. 30-year bonds. The company have secured control of the Orford Copper Company, the Canadian Copper Company and the Anglo-American Iron Company, and the Vermilion Mining Company, who are subsidiary concerns of the Canadian Copper company; the Nickel Corporation of London, the American Nickel Company of Camden and the Société Miniere Caledonienne of New Caledonia.

The following officers and directors were elected: Chairman of the board, Robert M. Thompson, president of the Orford Copper Company; president, Ambrose Monell, assistant to the president of the Carnegie Company and metallurgist of that company; secretary, Stephen H. P. Pell; treasurer, Joseph Claudet; general counsel, Max Pam; directors, R. M. Thompson, Ambrose Monell, E. C. Converse, Max Pam, John R. De Lamar, Joseph Wharton, Millard Hunsicker, chairman of the board of the Nickel Corporation of London; Archibald W. Maconochie, and Leslie D. Ward of Newark, N. J. The Executive Committee consists of Messrs. Thompson, Monell, Converse, De Lamar and Pam.

◆

RUSSELL T. NOYES, a prominent citizen of Tilton, N. H., died on March 16, aged 77 years. Mr. Noyes was born in Deering, N. H., and moved to Tilton in 1872, where he engaged in the retail Stove and Tinware business.

New York Metal Exchange Election.

The annual election of the New York Metal Exchange was held at the Exchange Building, on Burling Slip, New York City, on Monday, March 31, when the following officers were elected:

President, Robert M. Thompson of the Orford Copper Company.

Vice-President, Adolph Lewissohn.

Treasurer, Charles S. Trench of Charles S. Trench & Co.

Board of Managers: B. Hochschild of the American Metal Company, Ltd.; H. H. Hendricks of Hendricks Bros., L. Nachmann, Julius Lobdell of J. H. Lobdell & Co., Jesse Lewissohn of the United Metals Selling Company, Wm. Jay Ives, George W. Jaques, and J. H. Lang of the National Lead Company.

Arbitration Committee: Edmund Hendricks of Hendricks Bros., S. A. Jennings of Bruce & Cook, J. Mitchell Clark of Naylor & Co., E. A. Caswell and L. Vogelstein.

Inspectors of Election: C. H. Bolles, Jr., of Merchant & Co., Incorporated; Robert Gentle and E. C. Collis.

Very little change was made in the *personnel* of the board, which is regarded as a strong one, in which copper and tin interests are most largely represented. The election of all the officers was unanimous.

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ROOFING SUPPLIES, METALS, TIN PLATES, &c.

REVISED APRIL 4, 1902.

Aluminum—

No. 1 Aluminum (guaranteed over 99% Pure), in ingots for remelting.

Small lots	⅌ ℔, 37¢
100-℔ lots	⅌ ℔, 35¢

Aluminum Sheet, B. & S. gauge.
In lots of 50 ℔s or more.

Wider than........ And including......	6-in 14-in ⅌ ℔	14-in. 24-in. ⅌ ℔.	24-in. 30-in. ⅌ ℔.
Nos. 13 to 19	$0.42	$0.44	$0.47
" 20	.44	.46	.49
" 21 to 23	.46	.48	.51
" 24	.46	.50	.53
" 25	.47	.51	.54
" 26	.47	.54	.59
" 27	.48	.57	.62
" 28	.48	.57	.64
" 29	.49	.60	.69
" 30	.50	.64	.77

Note.—Lots of less than 50 ℔s 5¢ ⅌ ℔ extra.

Antimony—

Cookson	⅌ ℔. 10¼@10¾¢
Hallett's	⅌ ℔, 8⅜@8¾¢
U. S.	⅌ ℔ 8⅛@8½¢

Brass, Roll and Sheet...... 30%

Conductors—

Corrugated.

Round or Square.—

Galvanized ½ or more. N'st'd	70&5%
" Not Nested	70&2½%
" Plain Round, ½ or more, Nested	70&5%
Galvanized, Plain Round, Not Nested.	70&2½%

Spiral Riveted.

Galvanized 40%

See also *Elbows and Shoes; Eave Trough Miters; Strainers, Conductor.*

Conductor Strainers—

See *Strainers, Conductor*

Copper—

Lake Ingot	13¼@13¾¢
Casting	13 @13¼¢
Sheet and Bolt	18¢ ⅌ ℔ basis
Cold Rolled Sheets	19¢ ⅌ ℔ basis
Cold Rolled and Polished Sheets	20¢ basis
Planished Sheets	21¢ basis
Bottoms, Pits and Flats	⅌ ℔ 22¢ basis

Eave Trough Galvanized

Territory.	L. C. L.
Eastern	75&10%
Central	75&7½%
Southern	70&12½%
S. Western	70&10%

Terms, 2% for cash.

Eave Trough Mitres—

Lap or Slip Joint .... list, 25%

Elbows—Plain Adjustable—

Eastern List.

Tin	30%
Galvanized	30%
Perfect Elbows	40%

Stove Pipe—

Four-Piece

	4	4½	5	5½	6-inch.	
No. 1.	$0.80	.85	.90	1.00	1.05	per doz.
No. 2.	.65	.70	.75	.80	.85	"
No 3.	.60	.63	.65	.70	.80	"

Elbows and Shoes—

Galvanized 60%

Gasoline—

See *Petroleum Products.*

Iron, Sheet—*Black.*

	One Pass, C. R.. Soft Steel.	R. G. Cleaned.
Nos. 14 to 16	⅌ ℔. 3.50	3.55¢
Nos. 18 to 21	⅌ ℔, 3.60	3.65¢
Nos. 22 to 24	⅌ ℔. 3.70	3.75¢
Nos. 25 and 26	⅌ ℔, 3.80	3.85¢
No. 27	⅌ ℔, 3.90	3.95¢
No. 28	⅌ ℔, 4.00	4.05¢

Russia, Planished, &c.

Genuine Russia, according to assortment	⅌ ℔ 11@14 ¢
Do. Stained	6@10½¢
Patent Planished. ⅌ ℔ A, 11¢: B, 10¢ net	

Galvanized.

Nos. 10 to 16	⅌ ℔, 12¢	70@70&2½% off
Nos. 17 to 21	⅌ ℔, 13¢	
Nos. 22 to 24	⅌ ℔, 14¢	
Nos. 25 to 26	⅌ ℔, 15¢	
No. 27	⅌ ℔, 16¢	
No. 28	⅌ ℔, 17¢	
No. 29	⅌ ℔, 19¢	
No. 30	⅌ ℔, 21¢	

36 in. 1¢ ⅌ ℔ higher.

Lead—

American Pig		4.45@4½¢
Bar		5@5⅛¢
Pipe	6½¢	20% off
Tin Lined Pipe	12½¢	20% off
Block Tin Pipe	35 ¢	20% off
Sheet Lead	7¼¢	20% off

Old Lead in exchange, 3¾¢ ⅌ ℔.

Mitres Eave Trough—

See *Eave Trough Mitres.*

Nickel—

Per ℔ .... 55@60¢

Paints, Oils, &c.—

Leads—

Lead, American White, in Oil:	
Lots of 500 ℔ or over	6¼ @ 6½
Lots less than 500 ℔	6½ @ 6¾
Lead, White, in oil, 25 ℔ tin pails, add to keg price	@ ½
Lead, White, in oil, 12½ ℔ tin pails, add to keg price	@ 1
Lead, White, in oil, 1 to 5 ℔ assorted tins, add to keg price	@ 1½
Lead, White, Dry in bbls	5¾ @ 6
Lead, Red, bbls., ½ bbls. and kegs:	
Lots 500 ℔ or over	@ 6
Lots less than 500 ℔	@ 6½

Oils—

Linseed, City, raw ⅌ gal.	64¢
Linseed, City, boiled	66¢
Linseed State and West'n, raw	63¢

Spirits Turpentine—

In Southern bbls	50½@51 ¢
In machine bbls	51½@52 ¢

Putty—

In bulk	$1.25
In bladders	2.25
In cans 12 ℔ to 25 ℔	2.25
In cans 1 ℔ to 5 ℔	3.25

Petroleum Products—

In Barrels (Barrel Included)

Stove Gasoline	⅌ gal. 10½@11¢
Kerosene	⅌ gal. 12@13¢

Pipe, Drain 40%

Pipe, Spiral—

See *Conductors.*

Registers—

List Sept. 2, 1901.

Black Japanned	60&10@60&10&5%
White Japanned	60&10@60&10&5%
Nickel Plated	60&10@60&10&5%
Bronze Finishes in Imitation of Gold, Silver, Copper or Bronze	60&10@60&10&5%
Electroplated in Brass, Bronze or Copper	60&10@60&10&5%
White Porcelain	60%
Solid Brass and Bronze Metal	50%

Roofing Material—

1 Ply Tarred Paper. ⅌ ton.	$30.00@31.00
2 Ply Tarred Paper... ⅌ roll, 108 sq. ft.	50@55¢
3 Ply Tarred Paper.. ⅌ roll, 108 sq. ft.	70@75¢
Slater's Felt.......roll 500 sq. ft.,	50@60¢
Roofing Pitch	⅌ bbl. $2.38

Rosin—

Common and Good—Strained.

Rosin, C. & D.	⅌ bbl.	$1.62½@$1.65
Rosin, E. & F.	⅌ bbl.	1.70 @ 1.75
Rosin, G. & H	⅌ bbl.	1.80 @ 1.82½
Rosin, I. & K.	⅌ bbl.	2.02½@ 2.65
Rosin, M. & N.	⅌ bbl.	3.00 @ 3.55

Shoes and Elbows—

See *Elbows and Shoes.*

Slate Roofing—

f. o. b. cars, Quarry Station.

	According to size.
Pennsylvania:	
Best Bangor, ⅌ sqr.	$3.25@$4.50
No. 1 Bangor Ribbon. ⅌ sqr	3.00@ 3.50
Pen Argyle, ⅌ sqr.	3.00@ 3.75
Peach Bottom, ⅌ sqr	4.85@ 5.60
No. 1 Boys, ⅌ sqr	3.35@ 3.55
No 1 Chapman Keystone. ⅌ sqr	3.25@ 4.25
Vermont:	
Sea Green, ⅌ sqr	$2.00@$3.25
Purple, ⅌ sqr	3.75 @ 4.25
Unfading Green, ⅌ sqr...	3.25@ 4.50
Red, ⅌ sqr	7.00@11.00
Maine:	
Brownville, Unfading Black.	
No. 1 quality	$5.25@7.50
No. 2 quality	$4.25@6.00

Solder—

½&½ guaranteed	17½@18¢
No. 1	15@16½¢

Prices of Solder indicated by private brands vary according to composition.

Soldering Fluids—

	Per Pound. Barrels	Smaller Q'ntities
Concentrated Flux	4c	5c
Eureka Flux:		
Triple Strength	3c	3½c
Extra Concentrated	4½c	5c
Crystal	..	7c
Gedney's Fluid	2c	2c
Lennox Fluid	2c	3c
Perfection Flux	3c	3½@1c

Yager's Salts, 1 lb. bottles........each, 50¢
5 lb. bottles, per lb., 45¢

Soldering Coppers—

Per ℔ .... 20@22¢

Spelter—

Western Spelter .... 4.60@4.70¢

Spiral Pipe—

See *Conductors*

Stove Pipe Elbows—

See *Elbows, Stove Pipe.*

Stove Trucks—

See *Trucks, Stove.*

Strainers, Conductor—

Galvanized 50%

Tin Pigs and Bars—

Banca, pigs. ⅌ ℔	27½@27¾¢
Straits, pigs. ⅌ ℔	27½@27¾¢
Straits, in bars. ⅌ ℔	28½@28¾¢

Tin Plates, American

Charcoal Plates, Bright—

N. B.—The price of 20 x 28 sizes is double the price of 14 x 20.

Calland Grade:		
IC,	14 x 20	$7.50
IX,	14 x 20	9.00
IXX,	14 x 20	10.25
IXXX.	14 x 20	11.50
IXXXX.	14 x 20	12.75
Melyn Grade:		
IC,	14 x 20	7.00
IX,	14 x 20	8.50
IXX,	14 x 20	9.75
IXXX.	14 x 20	11.00
IXXXX	14 x 20	12.25
Allaway Grade:		
IC,	14 x 20	6.50
IX,	14 x 20	7.60
IXX,	14 x 20	8.70
IXXX,	14 x 20	9.80
IXXXX.	14 x 20	10.90

Coke Plates, Bright—

Bessemer Steel, or equal to J. B. Grade, full weight	IC, 14 x 20	$4.90@5.00
" "	IX, 14 x 20	$6.00

N. B.—The reduction per box on lighter Plates than IC, 14 x 20, is as follows:

100 ℔	15¢
95 ℔	20¢
90 ℔	25¢
85 ℔	30¢

Terne Plates—

N. B.—The following prices are for IC 20 x 28, the rate for 14 x 20 being half as much. IX is usually held at $2 per box advance for 8 to 10 ℔ coating and $2.50 to $3 advance for 15 ℔ and upward.

About 40 ℔ coating	$16.00@16.50
About 30 ℔ coating	15.25@15.75
About 20 ℔ coating	13.25@13.75
About 15 ℔ coating	11.25@11.75
About 8 ℔ coating	@10.00

Boiler Plates, American—

IXX, 14 x 26..(112 sheets)	$12.50
IXX, 14 x 28..(112 sheets)	13.50
IXX, 14 x 31..(112 sheets)	15.00

Troughs, Eave—

See *Eave Trough.*

Trucks, Stove—

Improved Lock Frame, per doz	$15.00
Steel Lock Frame, per doz	18.00
Daisy Improved pattern, ⅌ doz	18.00

Tubes and Tubing—

Brazed Brass, List June 6, 1898 .... 40%

Copper and Bronze, 3c per lb. list more than Brass.

Seamless Brass Tubes, net list Feb. 6 1899

Tin	50%
Galvanized	50%
Fittings for do	40%

Zinc—

600 ℔ casks ⅌ ℔	6¾¢
Per ℔	7¼¢

PLUMBERS' AND STEAM FITTERS' SUPPLIES.

Boilers, Galvanized—

Standard Boilers:	
30 gal	70&10%
35 and 40 gal	70%
Other sizes up to 52 gal	60@60&10%
52 gal. and above	60%
Extra Heavy Boilers:	
18 to 52 gal	60%
53 gal. and above	55%

Brass Work, Plumbers'—

List of December 7, 1896.

Compression:	
Basin Cocks	65%
Bath Cocks and Double Bath Cocks	65%
Bibs	65%
Bibs, Flanged	65%
Fuller:	
Bibs	70%
Basin Cocks, Nos. 1 to 4	70%
Bath Cocks, No. 4½	$2.40 each net
Ground Key Work:	
Finished Bibs	55&5%
Rough Bibs	70%
Rough Stop and Stop and Waste Cocks	70@70&5%
Rough Stop and Stop and Waste Cocks, Patented	65@65&5%

Miscellaneous—

Basin Clamps	60@65%
Basin Plugs	60@65%
Chain Stays	60&5@70%

Iron Boiler Couplings:

	Lead Pipe.	Iron Pipe.
Plain Face.. ⅌ set	$0.95	$1.05
Ground Face ⅌ set	$1.00	$1.10

Sink or Bath and Wash Tray Plugs	60@65%
Soldering Nipples	70&5@75%
Soldering Unions	70&5@75%
Union Elbows, Hot Water Heating	75@75&15%

Cocks, Valves, &c.—

Cocks—

Brass—

Air and Radiator Air	75@75&5%
Gas Meter and Union Meter	65@70%
Steam	65@70%

Iron—

All Iron	70@70&10%
Iron with Brass Plugs	65@70%

Valves—

Brass—

Check	65@70%
Garden Hose	65&10@70%
Gate	65@65&10%
Globe and Angle, hose outlet	65@65&10%
Globe, Angle and Cross	65&10@70&5%
Horizontal, Vertical and Angle Check	65@65&10%
Hot Water Radiator	75%
Radiator	70&10%
Safety	65%
Safety, Low Pressure	65%
Jenkins' Disc:	
Check	65%
Gate	65%
Globe, Angle and Cross	70%
Radiator	80%
Radiator, Corner	75%
Safety	65%

Iron—

Iron Body	70@70&5%
Foot	65@70%
Jenkins Bros.':	
All Iron, except Gate	40&5%
All Iron Gate	35@40%
Iron Body, except Gate	60%
Iron Body Gate	50@50&5%
Swing Check	50%

Earthenware—

Brown Glazed Wash Tubs	20%
Brown Glazed Sinks, Kitchen and Pantry	20%
Basins, Urinals and Hoppers	45%
Closet Bowls, Sundries, Washouts and Pedestals	50%

Fittings—

Brass Fittings—

Finished	70@75%
Rough	70@75%
Bushings	70@75%
Nipples	70@70&2½%
Unions, Rough and Finished	70@70&5%

Iron—

Cast Iron Fittings, Black and Galvanized, Standard sizes	65@70%
Cast Iron Bushings and Plugs	65@70%
Cast Iron Flanges	65@70%
Cast Iron Floor Flanges	65@70%
Malleable Iron Fittings (from ℔ list)	50%
" " Bushings	65@70%
" " Unions	65@70%
" " Unions, Flange	60&10@70%
" " Pipe Hangers, Universal	50%
Wrought Iron Nipples	65@70%
" " Couplings	60@65%
" " Long Screws	60@65%

Lavatories—

Porcelain Enameled Iron .... 30@30&10%

Oakum—

Plumbers' Oakum, 50 lb. bales, ⅌ ℔ 2½¢

Pipe—

Brass, Iron Pipe Size—

⅛	¼	½	¾ to 3 Inch
$0.38	.34	.29	.23 ⅌ ℔

Cast Iron Soil—

List Feb. 25, 1901.
2 to 6 inch inclusive.

Standard	50&5%
Extra Heavy	60@7½%
All Fittings	65@10%

7 to 15 inch.

Pipe and Fittings, Standard and Extra Heavy 50%

Wrought Iron—

List Feb. 15, 1900.

	Black.	Galv
⅛ to ½ inch	55%	41%
¾ to 12 inch	65%	50%

Radiators—

Standard List.

Steam	50&2½%
Hot Water	50%

Sinks, Etc.— Cast Iron—

	Black.	Galv.
Sinks, Square, Half Round and Corner	60@65%	60@65%
Sink Legs.	60%	60@65%
Sink Backs	60%	60@65%
Boiler Stands, Cast Iron	60@60&10%	
Cesspools, Cast Iron	60%	

Wrought Steel Sinks—

New Era, Galv'd and Enameled.	70&5%
New Era, Painted	50&10%
L. & G	50%

Traps—

Drawn Lead Traps, List June 3, 1901........ 50&5%

Tubs, Bath—

List April 1, 1902.

Cast Iron Enameled Bath Tubs.	
Regular Patterns, Guaranteed	30%
All Special Patterns	15%
Solid Copper, list of Feb. 1, 1899	40%
Solid Porcelain—Class A, 30%: B, 40%: C, 50%.	
Steel Clad Copper Lined, list of Feb. 1, 1899	50@55%

CLASSIFIED LIST OF ADVERTISERS.

Acetylene Gas Generators.
International Heater Co., Utica, N. Y.

Agate Nickel-Steel Ware.
Lalance & Grosjean Mfg. Co., 19 Cliff St., N. Y.

Aluminum Coated Sheet Steel.
Steel & Iron Aluminum Coating Co., Connellsville, Pa.

Aluminum Ingots.
Janney, Steinmetz & Co., Phila., Pa.

Aluminum Scrap Buyers.
Janney, Steinmetz & Co., Phila., Pa.

Aluminum Sheets.
Janney, Steinmetz & Co., Phila., Pa.

Architectural Ornaments.
Edwards Mfg. Co., Covington, Ky.
Frand, Martin J. & Co., Camden, N. J.
Friedley & Voshardt, Chicago, Ill.
Mullins, W. H., Salem, O.

Ball Cocks
Foster, F. W. Mfg. Co., Boston, Mass.

Bathtubs.
Day Metallic Mfg. Co. Detroit, Mich.

Black Plates.
American Tin Plate Co., New York.
Taylor, N. & G. Co., Phila., Pa.

Blast Gates.
American Blower Co., Detroit, Mich.

Blowers.
American Blower Co., Detroit, Mich.

Boiler Handles.
Berger Bros. Co., Phila., Pa.

Boilers
Mueller, L. J. Furnace Co., Milwaukee, Wis.

Boilers, Range.
Koven, L. O. & Bro., 50 Cliff St., N. Y

Brass Goods
Jenkins Bros., 71 John St., N. Y.
Zero Valve & Brass Mfg. Co., Buffalo, N. Y

Can Makers' Tools and Machines.
Bliss, E. W. Co., Brooklyn, N. Y.
Niagara Machine & Tool Wks., Buffalo, N. Y.
Robinson, J. M. Mfg. Co., Cincinnati, Ohio
Stiles & Parker Press Co., Brooklyn, N. Y
Toledo Machine & Tool Co., Toledo, O.

Castings, Iron.
Taylor & Boggis Foundry Co., Cleveland, O.

Ceilings, Metallic.
Berger Mfg. Co., Canton, O.
Canton Steel Roofing Co., Canton, O.
Eller, J. H. & Co., Canton, O.
Friedley & Voshardt, Chicago, Ill.
New York Iron Roofing & Cor. Co., Jersey City, N. J.

Cellar Drainers.
Kemp, C. M. Mfg. Co., Baltimore, Md.

Cement Tampers.
Kramer Bros., Dayton, O.

Coal Vases.
Cincinnati Stamping Co., Cincinnati, Ohio.

Coils.
National Pipe Bending Co., New Haven, Conn.

Conductor Pipe and Elbows.
American Steel Roofing Co., Middletown, O.
Berger Bros. Co., Philadelphia, Pa.
Clark, Quien & Morse, Peoria, Ill.
Lawrence-Letts Elbow Co., Ltd., Waverly, N. Y.
McClure & Co., Pittsburgh, Pa.

Copper, Roofing and Cornice.
Gummey, McFarland & Co., Phila., Pa.

Cornice Machinery.
Double Truss Cornice Brake Co., Buffalo, N. Y.
Dreis, Andrews & Krump, Chicago, Ill.
Keene, Geo. C. & Co., Cincinnati, O.
Niagara Machine & Tool Works, Buffalo, N. Y.
Ohl, Geo. A. & Co., Newark, N. J.
Peck, Stow & Wilcox Co., 27 Murray St., New York.
Phila. Machine Tool Co., Phila., Pa.
Robinson, J. M. Mfg. Co., Cincinnati, Ohio.

Cornice Work, Galvanized Iron.
Mullins, W. H., Salem, O.

Couplings. *(See Pipe Couplers.)*

Cut Offs, Rain Water.
Cooney & Geiger, Indianapolis, Ind.

Dampers
Shields, W. H. & Co., Troy, N.Y.
Taylor & Boggis Fdry. Co., Cleveland, Ohio.
Troy Nickel Works, Troy, N. Y.

Die Stocks.
Curtis & Curtis Co., Bridgeport, Ct.

Drop Hammers.
Bliss, E. W. Co., Brooklyn, N. Y
Toledo Mach. & Tool Co., Toledo, O

Dryers.
Sommer's, John Son, Newark, N. J.

Dumb Waiters.
Energy Elevator Co., Phila., Pa.

Eave Troughs.
Berger Bros. Co., Philadelphia, Pa.
Berger Mfg. Co., Canton, O.
Clark, Quien & Morse, Peoria, Ill.
Eller, J. H. & Co., Canton, O.
Reeves Mfg. Co., Canal Dover, O.

Eave Trough End Formers.
Bishop, G. E., Dowagiac, Mich.

Eave Trough Hangers.
Berger Bros. Co., Phila., Pa.
Berger Mfg. Co., Canton, O.

Elbows, Stove Pipe.
Lawrence-Letts Elbow Co., Ltd., Waverly, N. Y.
Shepard, Sidney & Co., Buffalo, N. Y.

Emery Wheels.
Scranton Corundum & Emery Wheel Co., Scranton, Pa.

Enameled Ware.
Lalance & Grosjean Mfg. Co., 19 Cliff St., New York.
National Enameling & Stamping Co., 78 Beekman St., N. Y.

Exhausters.
American Blower Co., Detroit, Mich.

Faucets.
Clark Novelty Co., Rochester, N. Y

Fire Brick.
Presbrey Stove Lining Co., Taunton, Mass.
Rutland Fire Clay Co., Rutland, Vt.
Valentine, M. D. & Bro. Co., Woodbridge, N. J.
Williams Stove Lining Co., Taunton, Mass.

Fire Pots.
Burgess Soldering Furnace Co., Columbus, Ohio.
Clayton & Lambert Mfg. Co., Detroit, Mich.

Fire Sets.
Shields, W. H. & Co., Troy, N. Y.
Troy Nickel Works, Troy, N. Y

Furnace Cement.
Perkins, J. L. & Co. Chicago.
Rutland Fire Clay Co., Rutland, Vt.

Furnace Pipe and Fittings.
Excelsior Steel Furnace Co., Chicago, Ill.
International Heater Co., Utica, N. Y.
Osborn, J. M. & L. A., Cleveland, O.

Furnaces and Heaters.
Amer. Furnace Co., St. Louis, Mo.
Barstow Stove Co., Providence, R.I.
Beckwith, P. D., Est. of, Dowagiac, Mich.
Bergstrom Bros. & Co., Neenah, Wis.
Bonnot Co., Canton, O.
Boynton Furnace Co., 207 Water St., N. Y.
Brand Stove Co., Milwaukee, Wis.
Brien Heater Co., Hoosick Falls, N. Y.
Cory, Uzal & Co. 210 Water St., N. Y.
Floyd, Wells & Co., Royersford, Pa.
Forest City Fdry. & Mfg. Co., Cleveland, O.
Graff Furnace Co., 208 Water Street, New York.
Hart & Crouse Co., Utica, N. Y.
Hess-Snyder Company, Massillon, Ohio.
International Heater Co., Utica, N. Y.
Kelsey Heating Co., Syracuse, N. Y.
Lennox Manufacturing Co., Marshalltown, Iowa.
Magee Furnace Co., Boston, Mass.
Moncrief Furnace & Fdry Co., Atlanta, Ga.
Mueller, L. J. Furnace Co., Milwaukee, Wis.
Patric Furnace Co., Springfield, O.
Peck-Williamson Co., Cincinnati, O.
Richmond Stove Co., Norwich, Conn.
Robinson Furnace Co., Chicago, Ill.
Schill Bros. Co., Crestline O.
Sheppard, Isaac A. & Co., Phila., Pa.
Stamford Foundry Co., Stamford, Ct.
Stanton Heater Co., Martins Ferry, O.
Tubular Heating and Ventilating Co., Phila., Pa.
Utica Heater Co., Utica, N. Y.

Gas Heaters. *(See Stoves and Ranges, Gas.)*

Gas Machines.
Kemp, C. M. Mfg. Co., Baltimore, Md.

Granite Steel Ware.
National Enameling & Stamping Co., 78 Beekman St., N. Y.

Groovers.
Wheeler, W. A., Indianapolis, Ind

Gutter Formers.
Double Truss Cornice Brake Co., Buffalo, N. Y.

Hack Saws.
Millers Falls Co., 28 Warren St., N. Y.

Heaters, Steam and Hot Water.
American Radiator Co., Chicago, Ill.
Barstow Stove Co., Providence, R. I.
Boynton Furnace Co., 207 Water St., N. Y.
Drake, W. H., Newark, N. J.
Gorton & Lidgerwood Co., 96 Liberty St., New York.
Gurney Heater Mfg. Co., Boston, Mass.
Hart & Crouse Co., Utica, N. Y.
International Heater Co., Utica, N. Y.
Kewanee Boiler Co., Kewanee, Ill.
Magee Furnace Co., Boston, Mass.
Mueller, L. J. Furnace Co., Milwaukee, Wis.
National Pipe Bending Co., New Haven, Conn.
Pierce, Butler & Pierce Mfg. Co., Syracuse, N. Y.
Richmond Stove Co., Norwich, Conn.
Sheppard, Isaac A. & Co., Phila., Pa.
Smith, H. B. Co., Westfield, Mass.
Smith & Anthony Co., Boston, Mass.
Smith & Thayer Co., Boston, Mass.
Stolz, Frank D., Chicago, Ill.
Utica Heater Co., Utica, N. Y.
Vance Boiler Works, Geneva, N. Y.
Wireton Heating Co., Blue Island, Ill.

Hollow Ware.
Lalance & Grosjean Mfg. Co., 19 Cliff St., N. Y.
National Enameling & Stamping Co., 78 Beekman St., N. Y.
Sperry, D. R. & Co., Batavia, Ill.

Hotel Cooking Apparatus.
Smith & Anthony Co., Boston, Mass.

Household Specialties.
Shepard, Sidney & Co., Buffalo, N. Y.

Ice Cream Dishers.
Clad, V. & Sons, Philadelphia, Pa.
Seavey Mfg. Co., Boston, Mass.

Iron, Galvanized Sheet. *(See Sheets, Galvanized.)*

Iron and Steel, Sheet. *(See Sheets, Iron and Steel.)*

Iron, Planished Sheet.
Amer. Sheet Steel Co., New York.

Lath, Metallic.
Schratwiesers Metal Lath Works.

Lead Pipe.
Colwell Lead Co., 63 Centre St., N. Y.

Lead Washers.
Littleford Bros., Cincinnati, O.

Lightning Rods.
Washburne, E. G. & Co., 46 Cortlandt St., N. Y

Lunch Boxes.
Seavey Mfg. Co., Boston, Mass.

Mail Boxes.
Signal Mail Box Co., Joliet, Ill.

Metal Ceilings. *(See Ceilings, Metallic.)*

Mica.
Munsell, Eugene & Co., 218 Water St., New York.
Ohio Mica Co., Canton, Ohio.
Rutland Fire Clay Co., Rutland, Vt.

Milk Cans.
National Enameling & Stamping Co., 78 Beekman St., N. Y.

Oil Heaters. *(See Stoves and Ranges, Oil, Vapor and Gasoline.)*

Ovens, Portable.
Blodgett, G. S. Co., Burlington, Vt.

Patent Solicitors.
Hamlin, G. R., Washington, D. C.
Howson & Howson, Philadelphia, Pa.
Stocking, E. B., Washington, D. C.

Patterns.
Cope, Geo. W., Detroit, Mich.
Gobeille Pattern Co., Cleveland, Ohio.
Gray, G. L., Galesburg, Ill.
Vedder Pattern Wks., Troy, N. Y.

Perforated Sheet Metal.
Harrington & King Perforating Co., Chicago, Ill.

Pig Iron.
Wister, L. & R. & Co., Philadelphia, Pa.

Pipe Cutting and Threading Machines.
Curtis & Curtis Co., Bridgeport, Ct.
Saunders, D. Sons, Yonkers, N. Y.

Pipe Joint Cement.
Callahan, Geo. & Co., 218 Front Street, N. Y.

Pipe Support Fittings.
Oberle, J. F., 780 2d Ave., N. Y.

Pipe Vises.
Walworth Mfg. Co., Boston, Mass.

Pipe, Water and Gas.
Millar, C. & Son Co., Utica, N. Y.

Plumbers Tools, Specialties and Supplies.
American Distributing Co., Syracuse, N. Y.
Anderson Coupling Co., Portland, Ct.
Barstow Stove Co., Providence, R. I.
Clayton & Lambert Mfg. Co., Detroit, Mich.
Colwell Lead Co., 63 Centre St., N. Y.
Foster, F. W. Mfg. Co., Boston, Mass.
National Pipe Bending Co., New Haven, Conn.
Oberle, J. F., 780 2d Ave., N. Y.
Pierce, Butler & Pierce Mfg. Co., Syracuse, N. Y.
Walworth Mfg. Co., Boston, Mass.
Young, Jos. H., Boston, Mass.
Zero Valve & Brass Mfg. Co., Buffalo, N. Y

Pliers, Pipe Expanding.
Anderson Coupling Co., Portland, Ct.

Pokers and Lifters.
Shields, W. H. & Co., Troy, N. Y
Troy Nickel Works, Troy, N. Y.

Potato Masher.
Vogel, Wm. & Bros., 37 to 47 S. 9th St. Brooklyn, N. Y.

Press Work.
Kirk Mfg. Co., Toledo, O.

Presses and Dies.
Bliss, E. W. Co., Brooklyn, N. Y.
Miner & Peck Mfg. Co., New Haven, Conn.
Niagara Machine & Tool Wks., Buffalo, N. Y.
Phila. Machine Tool Co., Phila., Pa.
Robinson, J. M. Mfg. Co., Cincinnati, Ohio.
Swaine, F. J. Co., St. Louis, Mo.

Pumps.
Hess-Snyder Company, Massillon, Ohio
Lawless, John H., Jersey City, N. J.

Punching Machines.
Bertsch & Co., Cambridge City, Ind.
Bliss, E. W. Co., Brooklyn, N. Y.
Clough, R. M., Tolland, Conn.
Robinson, J. M. Mfg. Co., Cincinnati, Ohio.
Toledo Mach. & Tool Co., Toledo, O.

Radiators, Hot Air.
Burton, W. J. & Co., Detroit, Mich.
Independent Register Co., Cleveland, Ohio.

Radiators, Steam and Hot Water.
American Radiator Co., Chicago, Ill.
Gurney Heater Mfg. Co., Boston, Mass.
Pierce, Butler & Pierce Mfg. Co., Syracuse, N. Y.

Range Boilers.
Koven, L. O. & Bro., 50 Cliff St., N. Y.

Reflectors.
Frink, I. P., 551 Pearl St., New York.

Refrigerators.
Challenge Refrigerator Co., Grand Haven, Mich.
Cooper & McKee, Brooklyn, N. Y.
Gurney Refrigerator Co., Fond du Lac, Wis

Registers.
Canton Steel Roofing Co., Canton, O.
Independent Register Co., Cleveland Ohio.
Seavey Mfg. Co., Boston, Mass.

Registers, Hot Air.
U. S. Register Co., Ltd., Battle Creek, Mich.

Roofing, Asphalt.
Asphalt Ready Roofing Co., 136 Water St., N. Y.

Roofing Cement and Paint.
Asphalt Ready Roofing Co., 136 Water St., N. Y.
Callahan, Geo. & Co., 218 Front Street, N. Y.
Dixon, Jos. Crucible Co., Jersey City N. J.
Perkins, J. L. & Co., Chicago.
Rutland Fire Clay Co., Rutland, Vt.

Roofing Cork.
Stowell Mfg. Co., Jersey City, N. J.

Roofing Edger.
Danzer Metal Works, Hagerstown, Md.

Roofing and Siding, Iron and Steel, Corrugated and Plain.
Berger Mfg. Co., Canton, O.
Burton, W. J. & Co., Detroit, Mich.
Canton Steel Roofing Co., Canton, O.
Eller, J. H. & Co., Canton, O.
Gummey, McFarland & Co., Phila., Pa.
New York Iron Roofing & Cor. Co., Jersey City, N. J.
Reeves Mfg. Co., Canal Dover, O.

Roofing Nails.
Salem Nail Co., 279 Pearl St., N. Y.

Roofing Slate.
Auld & Conger Co., Cleveland, O.
Bray, J. & Co., E. Bangor, Pa.
Galt, John & Sons, 253 Broadway, N. Y.
Genuine Bangor Slate Co., Easton, Pa.
Johnson, E. J. & Co., 38 Park Row, N. Y.
O'Halloran & Jacobs, Pittsburgh, Pa.

Sap Spouts.
Millar, C. & Son Co., Utica, N. Y

Schools and Colleges.
International Correspondence Schools, Scranton, Pa.

Screens.
Harrington & King Perforating Co Chicago, Ill.

Sewer Pipe.
Rutland Fire Clay Co., Rutland, Vt

Shaped Iron and Steel, Galvanized.
Am. Galvanizing Wks., Chicago, Ill.

Shears, Sheet Metal
McSherry, Chas., Pittsburgh, Pa.
Peck, Stow & Wilcox Co., 27 Murray St., N. Y.

Sheet Metal Machinery.
Bertsch & Co., Cambridge City, Ind.
Bliss, E. W. Co., Brooklyn, N. Y.
Clough, R. M., Tolland, Conn.
Double Truss Cornice Brake Co., Buffalo, N. Y
Excelsior Tool & Mch. Works, St. Louis, Mo.
Keene, Geo. C. & Co., Cincinnati, O.

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Miner & Peck Mfg. Co., New Haven, Conn.
Niagara Machine & Tool Wks., Buffalo, N. Y.
Ohl, Geo. A. & Co., Newark, N. J.
Peck, Stow & Wilcox Co., 27 Murray St., New York.
Phila. Machine Tool Co., Phila., Pa.
Robinson, J. M. Mfg. Co., Cincinnati, Ohio.
Stiles & Parker Press Co., Brooklyn, N. Y.
Swaine, F. J. Co., St. Louis, Mo.

Sheets, Aluminum Coated Steel.
Steel & Iron Aluminum Coating Co., Connellsville, Pa.

Sheets, Galvanized.
American Sheet Steel Co., New York.
Bruce & Cook, 186 to 190 Water St., N. Y.
McClure & Co., Pittsburgh, Pa.
Osborn, J. M. & L. A., Cleveland, O.
Wood Alan Co., Philadelphia, Pa.

Sheets, Iron and Steel.
American Sheet Steel Co., New York.
Bruce & Cook, 186 to 190 Water St., N. Y.
Coe, Jas. A. & Co., Newark, N. J.
Follansbee Bros. Co., Pittsburgh, Pa.
Gummey, McFarland & Co., Phila., Pa.
Osborn, J. M. & L. A., Cleveland, O.
Wood Co., Alan, Philadelphia, Pa.

Shingles and Tiles, Metallic.
Cincinnati Stamping Co., Cincinnati, O.
Cortright Metal Roofing Co., Philadelphia, Pa.
Meurer Bros. Co., Brooklyn, N. Y.
Montross Metal Shingle Co., Camden, N. J.
Penn Metal Ceiling & Rfg. Co., Phila., Pa.

Shot.
Colwell Lead Co., 63 Centre St., N. Y.

Siding. *(See Roofing and Siding.)*

Sinks.
Lalance & Grosjean Mfg. Co., 19 Cliff St., New York.

Skylights.
Canton Steel Roofing Co., Canton, O.
Drouve, G. Co., Bridgeport, Conn.
Mullins, W. H., Salem, O.
Rasner & Dinger, Pittsburgh, Pa.

Slaters' Tools.
Galt, Jno. & Sons, 253 Broadway, N. Y.
Salem Nail Co., 279 Pearl St., N. Y.

Smoke Test Machine.
Gunster & Forsyth, Scranton, Pa.

Snow Guards.
Clason Arch. Metal Works, Providence, R. I.

Solder.
Bruce & Cook, 186 to 190 Water St., NY
Follansbee Bros. Co., Pittsburgh, Pa.
Gummey, McFarland & Co., Phila., Pa.
McClure & Co., Pittsburgh, Pa.
Meurer Bros. Co., Brooklyn, N. Y.
Sanborn, J., 217 Water St., N. Y.
Taylor, N. & G. Co., Philadelphia, Pa.

Soldering Furnaces.
Burgess Soldering Furnace Co., Columbus, Ohio.

Speaking Tubes and Whistles.
Ostrander, W. R. & Co., 204 Fulton St., N. Y

Specialties, Sheet Metal.
Vogel, Wm. & Bros., Brooklyn, N. Y.

Statuary, Sheet Copper and Bronze.
Mullins, W. H., Salem, O.

Steam and Gas Fitters' Supplies.
Curtis & Curtis Co., Bridgeport, Conn
Walworth Mfg. Co., Boston, Mass.

Steam and Water Engineering and Regulating Specialties.
Kieley & Mueller, 7-11 West 13th St., N. Y

Steel Shapes.
Cambridge Rolling Mill Co., Cambridge, Ohio.

Steel Stamps and Stencil Dies.
Schwerdtle Stamp Co., Bridgeport, Ct.

Stove Bands.
Kirk Mfg. Co., Toledo, O.

Stove Cement.
Dixon, Jos. Crucible Co., Jersey City, N. J.
Rutland Fire Clay Co., Rutland, Vt.

Stove Linings.
Bridgeport Crucible Co., Bridgeport, Conn.
McLeod & Henry Co., Troy, N. Y.
Marcy Stove Repair Co., 74 Beekman St., N. Y.
Presbrey Stove Lining Co., Taunton, Mass.
Rutland Fire Clay Co., Rutland, Vt.
Valentine, M. D. & Bro. Co., Woodbridge, N. J.
Williams Stove Lining Co., Taunton, Mass

Stove and Metal Polish.
Hoffman, Geo. W., Indianapolis, Ind
Rutland Fire Clay Co., Rutland, Vt.

Stove Patterns.
Cope, G. W., Detroit, Mich.
Gobeille Pattern Co., Cleveland, O.
Milwaukee Pattern Works, Milwaukee, Wis.
Vedder Pattern Works, Troy, N. Y.

Stove Pipe Thimbles.
City Forge & Iron Works, Dayton, O.
O. K. Mfg. Co., Buffalo, N. Y.

Stove Repairs.
Clark, Henry N. Co., Boston, Mass.
Heath, C. C. & Co., Phila., Pa.
Marcy Stove Repair Co., 74 Beekman St., N. Y.
Metropolis Sheet Metals & Stove Repairing Co., Newark, N. J.
Troy Nickel Works, Troy, N. Y.

Stove Trimmings, &c.
Fanner Mfg. Co., Cleveland, O.
Shields, W. H. & Co., Troy, N. Y.
Troy Nickel Works, Troy, N. Y

Stoves and Ranges.
Barstow Stove Co., Providence, R. I.
Beckwith, P. D., Est. of, Dowagiac, Mich.
Bergstrom Bros. & Co., Neenah, Wis.
Boynton Furnace Co., 207 Water Street, New York.
Brand Stove Co., Milwaukee, Wis.
Enterprise Stove Co., Vincennes, Ind.
Floyd, Wells & Co., Royersford, Pa.
Fuller & Warren Co., Troy, N. Y.
Graff Furnace Co., 208 Water Street, New York.
Hess-Snyder Company, Massillon, O.
Joliet Stove Works, Joliet, Ill.
Magee Furnace Co., Boston, Mass.
Miller, Wm. Range & Furnace Co., Cincinnati, O.
Ohio Stove Co., Portsmouth, O.
Pittsburgh Stove & Range Co., Pittsburgh, Pa.
Quincy Fdry. & Novelty Co., Quincy, Ill.
Richmond Stove Co., Norwich, Conn.
Schill Bros Co., Crestline, O.
Sheppard, Isaac A. & Co., Phila., Pa.
Smith & Anthony Co., Boston, Mass.
Somerset Stove Foundry Co., Somerset, Mass.
Stamford Foundry Co., Stamford, Ct.
Weir Stove Co., Taunton, Mass

Stoves and Ranges, Gas.
Adler H. & Co., Pittsburgh, Pa.
Metropolis Sheet Metals & Stove Repairing Co., Newark, N. J.

Stoves and Ranges, Oil, Vapor and Gasoline.
Heath, C. C. & Co., Philadelphia, Pa.
Taylor & Boggis Foundry Co., Cleveland, O.

Street Lamps, Gasolene.
Merkel, H., St. Louis, Mo.

Tank Heaters.
American Radiator Co., Chicago, Ill.

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Edwards, J. H., 59 Park Place, N. Y.

Terne Plates.
American Tin Plate Co., New York.
Taylor, N. & G. Co., Phila., Pa.

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Berger Bros. Co., Phila., Pa.
Bertsch & Co., Cambridge City, Ind.
Bliss, E. W. Co., Brooklyn, N. Y.
Bruce & Cook, 186 to 190 Water St., New York.
Follansbee Bros. Co., Pittsburgh, Pa.
Keene, Geo. C. & Co., Cincinnati, O.
Niagara Machine & Tool Wks., Buffalo, N. Y.
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Peck, Stow & Wilcox Co., 27 Murray St., New York.
Stiles & Parker Press Co., Brooklyn N. Y.
Weiss, H. & Co., 20 Cliff St., N. Y

Tinners' Trimmings.
Vogel, Wm. & Bros. Brooklyn, N. Y.

Tin Plate.
American Tin Plate Co., New York.
Bruce & Cook, 186 to 190 Water St., New York.
Coe, Jas. A. & Co., Newark, N. J.
Follansbee Bros. Co., Pittsburgh, Pa.
Gummey, McFarland & Co., Phila., Pa.
McClure & Co., Pittsburgh, Pa.
Meurer Bros. Co., Brooklyn, N. Y.
Osborn, J. M. & L. A., Cleveland, Ohio.
Taylor, N. & G. Co., Philadelphia, Pa.

Tin Scrap.
Vulcan Metal Refining Co., 157 Cedar St., N. Y.
Vulcan Western Co., Streator, Ill.

Tinware.
Shepard, Sidney & Co., Buffalo, N. Y.

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Saunders', D. Sons, Yonkers, N. Y.

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Kirk Mfg. Co., Toledo, O.

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Crosby Steam Gage & Valve Co., Boston, Mass
Jenkins Bros., 71 John St., New York.
Morgan & Co., Chicago.

Ventilating Apparatus.
American Blower Co., Detroit, Mich.

Ventilators and Chimney Caps.
Berger Bros. Co., Phila., Pa.
Fenn, Geo. E., Boston, Mass.
Globe Ventilator Co., Troy, N. Y.
Kramer Bros., Dayton, O.
Meurer Bros. Co., Brooklyn, N. Y.
Washburne, E. G. & Co., 46 Cortlandt St., New York.

Washers, Valves, &c.
Littleford Bros., Cincinnati, O.
Marston, I. G. & Co., Boston, Mass.

Washing Machines.
Boss Washing Machine Co., Cincinnati, Ohio.
Wayne Anthony Mfg. Co., Ft. Wayne, Ind.

Water Coolers.
National Enameling & Stamping Co., 78 Beekman St., N. Y

Water Closets.
Colwell Lead Co., 63 Centre St., N. Y.
Zero Valve & Brass Mfg. Co., Buffalo, N. Y.

Water Fronts.
Clark, Henry N. Co., Boston, Mass.

Water Heaters.
Adam, W. J., Joliet, Ill.
Kemp, C. M. Mfg. Co., Baltimore, Md.

Wind Gates.
Miner & Peck Mfg. Co., New Haven, Ct.

Wiping Cloths.
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THE METAL WORKER.

With which is Incorporated The Stove and Tin Trade Journal, The Sheet Metal Builder, and Metal.

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Original letters of reference should not be inclosed with replies to advertisements appearing in these columns as they are frequently mislaid and lost. A copy of the reference will serve the purpose.

HELP WANTED.

SUPERINTENDENT for tin can factory also making few articles in pieced tinware; good opening for first-class man; no other need apply. "C.," care *The Metal Worker*, New York. Apr. 5

A good TINNER; sober and reliable; married man preferred; steady job year round; college town; good job for man with family to send to college. Watson & Thompson, Oberlin, Ohio. Apr. 5

By a Western tinware manufacturer a young man capable of taking full charge of retinning and tinning departments; give full details in regard to ability, state age, salary wanted and where last employed. Address applications to "P. K.," 89 Sixteenth street, Milwaukee, Wis. Apr. 5

A first-class TINNER and PLUMBER for inside and outside work; must be strictly temperate; steady position; please give references and state salary expected. C. B. Hodges, Depew, N. Y. Apr. 5

At once, a young man to work in tin and plumbing shop; steady work; state age and wages wanted. Fowler Brothers, Lowville, N. Y. Apr. 5

ESTIMATOR and SOLICITOR for architectural sheet metal, skylight and roofing shop; must be accurate, of undoubted ability, good address and long experience; state salary expected, with references which must be unquestioned. "Solicitor," care *The Metal Worker*, 117-119 South Fourth street, Philadelphia, Pa. Apr. 5

CORNICE FOREMAN and PATTERN CUTTER; a first-class foreman and pattern cutter in a large Western city; one that has had experience in superintending and handling of workmen; must come well recommended; state age, wages expected and former employers. Mesker & Bro., 421 South Sixth street, St. Louis, Mo. Apr. 5

Two or three first-class PLUMBERS and STEAM FITTERS; must have good references and be capable of handling large work; if not thoroughly competent do not apply. West Virginia Heating & Plumbing Company, Charleston, W. Va. Apr. 5

A MANAGER for Chicago branch of a large Eastern manufacturer of furnaces, ranges and boilers; fine opportunity for a man of energy and ability who controls some trade. Address, with full particulars, "M. F. T.," care *The Metal Worker*, New York. Apr. 5

A young man used to country jobbing with some experience in plumbing and heating. Box 30, Port Henry, N. Y. Apr. 5

A FILER and FITTER. Ohio Foundry Company, Steubenville, Ohio. Apr. 5

A TINNER familiar with light brake work; steady inside job. Ohio Foundry Company, Steubenville, Ohio. Apr. 5

A good SLATE ROOFER and CORNICE WORKER. Apply to the Peet & Schuster Company, Springfield, Ohio. Apr. 5

A first-class TINNER and SLATER; a steady job for the right man. Treon & Cade, Miamisburg, Ohio. Apr. 5

A good all around man; one who understands plumbing and heating; a strictly sober and reliable man; none other need apply; send references and state wages wanted; a good job to the right man. Rock Island Hardware Company, Rock Island, Vt. Apr. 5

A good ROOFER and TINSMITH to take charge of shop; good wages and steady job to right man. "Roofer," care *The Metal Worker*, New York. Apr. 5

A competent man to take charge of a department who understands kalameined work in all its branches. "Kalamein," care *The Metal Worker*, New York. Apr. 5

At once, a first-class TINNER and SLATE ROOFER; one who understands pumps, stoves and general country jobbing; must be sober and reliable; state wages, experience and give references. S. J. Seaman, Glen Cove, L. I., N. Y. Apr. 5

A No. 1 WORKING FOREMAN; one who is capable of detailing, cutting and constructing galvanized iron cornice and skylight, tin, iron and slate roofing and hot air heating; must be able to take charge of shop from 8 to 12 men; state age, nationality, what religious faith and what wages wanted; must be temperate. Box 974, Carnegie, Pa. Apr. 5

A first-class PLUMBER who can do a good job of tin work; to a good man a steady job will be given the year round at good wages. Frank R. Jarrell, Lexington, Ky. Apr. 5

Want to correspond with a good all around PLUMBER and TINNER. "Pipe," care *The Metal Worker*, New York. Apr. 5

Experienced FOREMAN for a gas and oil stove and steel range works; state experience, salary and give references. Wheeling Gas Stove & Range Company, Wheeling, W. Va. Apr. 5

A MACHINIST who thoroughly understands the working of sheet metal of all kinds, to take charge of machine shop, dies and machinery in a pieced and stamped tinware and enameled ware factory; state age, experience and salary expected. "Machinist," care *The Metal Worker*, New York. Apr. 5

A first-class PLUMBER; a steady job to the right man. Barrett Hardware Company, Joliet, Ill. Mar. 29

At once, one good PLUMBER and one good TINNER; good job; steady the year round. W. E. Frye, Marion, Ohio. Mar. 29

A first-class TINSMITH; sober and reliable; none other need apply. D. E. McNally & Co., 199 Union street, Worcester, Mass. Mar. 29

ENAMELER; want to correspond with man who is competent and thoroughly understands enameling on cast iron, such as bathtubs, and also sheet iron. "First-Class," care *The Metal Worker*, New York. Mar. 29

Several good SHEET IRON WORKERS as road mechanics; those used to blow pipe work preferred; state age, wages expected and where last employed. The Ohio Blow Pipe Company, corner Seneca and Michigan streets, Cleveland, Ohio. Mar. 29

FOREMAN for furnace tin shop employing 20 men; must have experience and furnish references. "K.," care *The Metal Worker*, New York. Mar. 15

SITUATIONS WANTED.

TINNER of 16 years' experience on all lines of in or outside job work, hot air furnace work, and a first-class workman; can clerk in store; strictly sober; steady work; city or country; state wages. P. O. Box 626, Lexington Ky. Apr. 5

As FLOOR SALESMAN and SHIPPING CLERK with furnace, range, steam or hot water heating concern; experienced; references. "S. F.," care *The Metal Worker*, New York. Apr. 5

By first-class PLUMBER; 15 years' experience in pipe fitting, furnace and gas work, also tinning; steady work; city or country; $3 per day; send tickets or fare. James Yancer, care James Barry, 2 East Eleventh street, New York. Apr. 5

By a licensed MASTER PLUMBER as SOLICITOR of trade in the steam, gas and plumbers' material line for the Greater New York and vicinity. "Solicitor," care *The Metal Worker*, New York. Apr. 5

By man of long and varied general busines experience, of executive ability and unquestionable character, engagement to open and manage branch store in the steam, gas and plumbers' supplies in either or all the principal boroughs of the Greater New York. "Branch Stores," care *The Metal Worker*, New York. Apr. 5

By TINSMITH; good, all round man on tin and sheet iron work, furnaces and ranges; in and outside work; city or country; eight years' experience. Nathan Ritterman, care M. Sacks, 338 East Seventy-fourth street, New York. Apr. 5

May 1 in cornice and skylight works as FOREMAN and CUTTER; sober, reliable, up to date man in all branches of the trade; outside of Greater New York preferred. "Cutter," care *The Metal Worker*, New York. Apr. 5

By an A1 PLUMBER, STEAM and HOT WATER FITTER; married; steady position; only those who want first-class work need answer. Chas. A. Clark, 6 Dean street, Adams, Mass. Apr. 5

By a good, all around man; experienced in plumbing and tinning; city or country. James Hyman, Pittsfield, Mass. Apr. 5

PLUMBER, licensed, would accept steady position with tinsmith controlling some plumbing trade; 15 years' experience; sober and reliable; handy at ranges, heaters and furnaces; job must be steady; wages $3 per day. John McLean, 1012 Fourth avenue, Brooklyn, N. Y. Apr. 5

As a SALESMAN with some good hardware, tinware, stove or house furnishing house; wholesale and retail experience; can speak German and English; New York State or Connecticut preferred. "German-American," care *The Metal Worker*, New York. Apr. 5

As TRAVELING SALESMAN in the East for furnaces, ranges, steam and hot water heaters, also supplies; can give good reference as to ability, character, &c., and am economical traveler. "M. D. W.," General Delivery, New Haven, Conn. Apr. 5

By a first-class TINNER, SHEET IRON WORKER and GENERAL JOBBER; have fair knowledge of plumbing and gas fitting; temperate and reliable; can furnish good references; state wages. "E. Z.," 918 Orange street, Redlands, Cal. Apr. 5

By PLUMBER, in the country. Geo. Conlin, 2342 Old Broadway, New York. Apr. 5

TINSMITH, all around hand, a good jobbing plumber, wants work; city or country. Harry Rosenbloom, 92 Madison street, New York. Apr. 5

By young man (21), strictly temperate; two years' experience in a retail hardware store as clerk; also has worked on stoves and can fit stove pipe; has good knowledge of bookkeeping; best of references. F. E. Ames, General Delivery, Milford, Mass. Apr. 5

By a first-class TIN and SHEET IRON WORKER; A1 on hot air heating and bench work; can do plating and plumbing; will do estimating if required; 20 years' experience in trade; age 34 years; Southwestern city; Texas preferred. "H. H.," care *The Metal Worker*, New York. Apr. 5

By a first-class TINSMITH; is a good tin and sheet iron worker; also furnace and range work; ten years' experience; good recommendation. M. Nathan, care H. Sacks, 1487 Second avenue, New York. Apr. 5

By a first-class TINNER and SLATER, who is strictly sober and steady; wages expected, $2.50 per day; first-class references furnished; Ohio or Indiana preferred. "Tinner," Box 163, Springfield, Tenn. Apr. 5

By a married man, 33 years of age, as TINNER, SHEET IRON WORKER and GENERAL JOBBER; have some knowledge of plumbing; can take charge of and clerk in hardware and stove store; sober and reliable; will furnish references. L. H. Wade, Durham, N. Y. Apr. 5

By a first-class PLUMBER and GAS FITTER; no steam or tinning; can figure from plans; best of references as to sobriety and ability. W. M. Sutton, 4 Magnolia terrace, North Adams, Mass. Apr. 5

By a first-class CORNICE and SKYLIGHT MAKER; also work from plans. A. Klein, 403 East Eleventh street, New York. Apr. 5

Salesman, who is an expert steam fitter and heating engineer, wishes position with steam heating house or foundry as SALESMAN, ESTIMATOR and CONSTRUCTION SUPERINTENDENT; well acquainted with dealers and the trade in Greater New York; moderate wages. "Heating," care *The Metal Worker*, New York. Apr. 5

A steady place as FOREMAN by a plumber and gas fitter; a man of 20 years' experience and 10 years as foreman; have figured and made plans, and am sober and reliable. "Goodspeed," Central and Elm streets, Gardiner, Maine. Apr. 5

As general man in shop; country or city; am capable of doing all kinds of iron pipe work, both gas, water and steam heating; can do a little lead work; open to work now. Carl Hubbard, 512 Railroad avenue, Sistersville, W. Va. Apr. 5

First-class JOURNEYMAN PLUMBER wants a steady position; sober and industrious. P. J. Kelly, 194 Concord street, Brooklyn, N. Y. Mar. 29

By a FURNACEMAN of 20 years' experience superintending and estimating and as salesman; would like a position by May 1; 18 years with a large house in Boston. "G. M.," 11 Allen street, Boston, Mass. Mar. 29

If you are in need of a first-class, all around man at PLUMBING, TINNING and HEATING I would be pleased to correspond with you. E. Tuttle, General Delivery, Milford, Mass. Mar. 29

By a young man, 33 years of age, first-class PLUMBER and GAS FITTER; 18 years' experience in New York City; can figure from and read plans; as journeyman or take charge; licensed and registered by New York Board of Health and Department of Public Works; go anywhere; state age and full particulars. P. H. Becker, 1980 Daly avenue, New York. Mar. 29

Experienced PLUMBER; city or country; wages moderate. "P.," care *The Metal Worker*, New York. Mar. 29

By young man (25), single, with 13 years' experience as tin and sheet iron worker, plumbing, steam and gas fitting, furnace, piping, pumps and ranges; strictly sober and reliable; steady job, wages $2.50 per day. Alfred B. Elwell, 46 Bamforth avenue, Danbury, Conn. Mar. 29

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To rent for one year, with the privilege of three, a foundry building, not smaller than 150 ft. x 50 ft. Must be equipped with cupola and elevator. Cupola not less than 36 in. inside of lining. Core room must have capacity for 20 hands. Work to be made is all of one class, no machine shop is necessary. Plant must not be West of Harrisburg nor East of the Hudson River. Address, giving rental and full particulars,

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FOR SALE.—TIN SHOP.

Tools and Stock. The only one in the place. Established 22 years. It might pay you to look after this shop.

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Tin Shop and Stove Store in the country. With store building or house. New England and near water preferred. Will give in exchange a mortgage for $3,400, drawing 6 per cent. interest. Good as a bank note.

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A clean stock of Hardware, Stoves and Queensware. All kinds of wire fencing. Located in central part of Southwest Missouri. County seat. Between 6,000 and 7,000 inhabitants. Three railroads. Good schools and churches. Stock between $8,000 and $10,000. Sales from $22,000 to $25,000. Rare chance. Reason, advanced age. Business over 30 years's standing. Can look up our standing in commercial agency. Will sell for cash only. Have tin shop and plumbing department. Address BOX 41, care *The Metal Worker*, Chicago.

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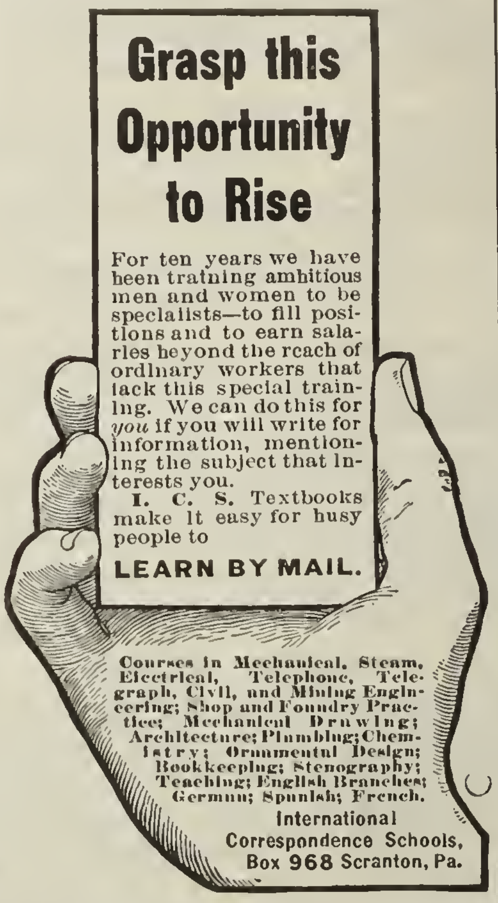

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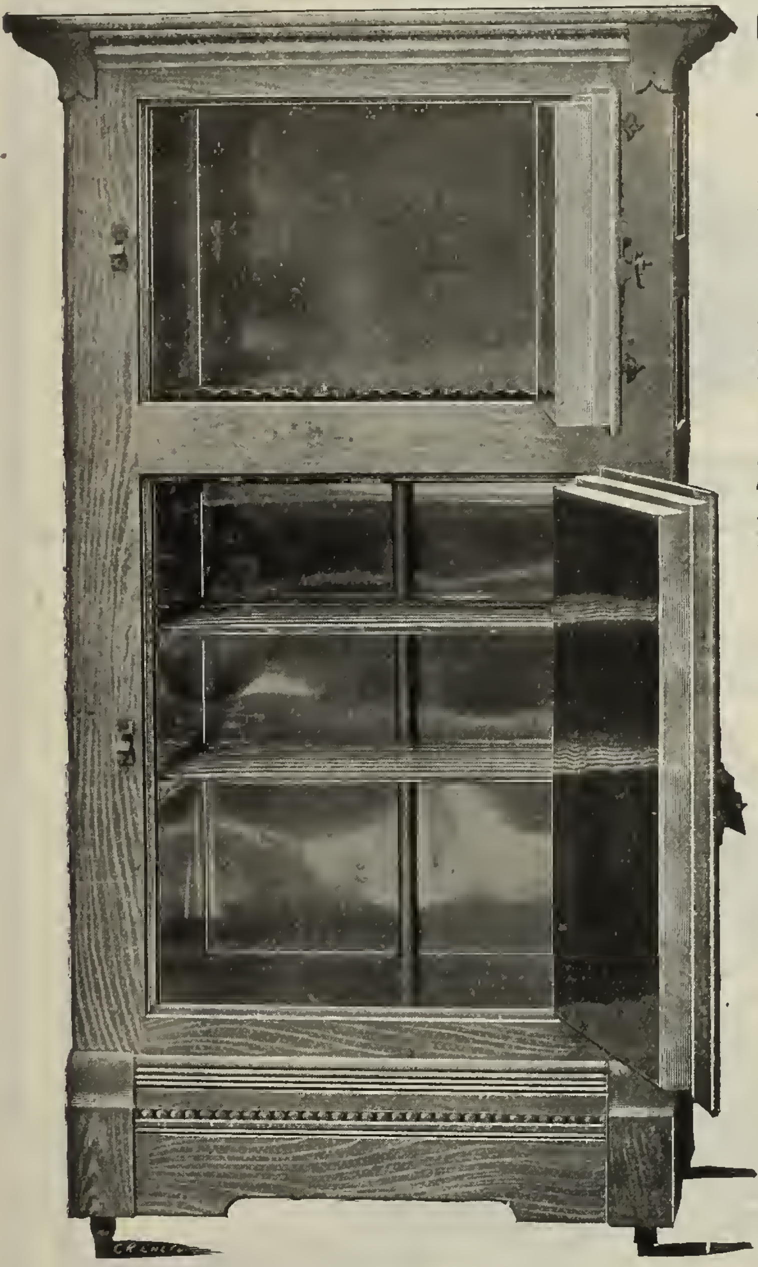

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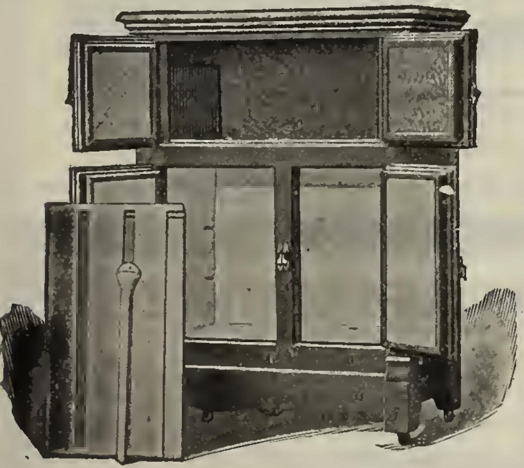

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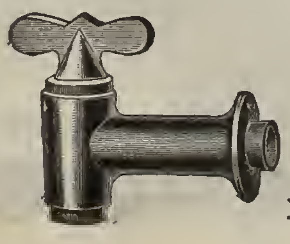

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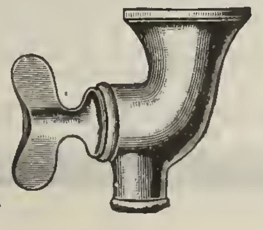

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We claim Purity and Safety, and Substantiate this claim with Chemists' Certificates.

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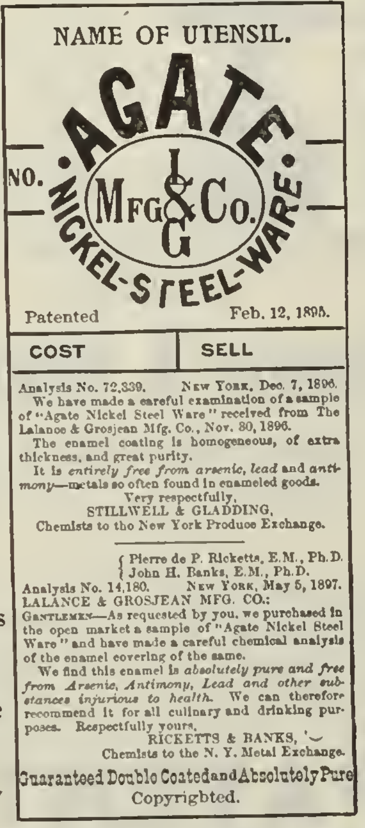
Printed on BLUE PAPER and pasted on every Kitchen Utensil made in Genuine AGATE NICKEL-STEEL WARE as a guarantee of Absolute PURITY and SAFETY


NAME OF UTENSIL.

NO.

AGATE
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G
NICKEL-STEEL-WARE

Patented Feb. 12, 1895.

COST	SELL

Analysis No. 72,339. NEW YORK, Dec. 7, 1896.

We have made a careful examination of a sample of "Agate Nickel Steel Ware" received from The Lalance & Grosjean Mfg. Co., Nov. 30, 1896.

The enamel coating is homogeneous, of extra thickness, and great purity.

It is *entirely free from arsenic, lead and antimony*—metals so often found in enameled goods.

Very respectfully,
STILLWELL & GLADDING,
Chemists to the New York Produce Exchange.

{ Pierre de P. Ricketts, E.M., Ph.D.
{ John H. Banks, E.M., Ph.D.

Analysis No. 14,180. NEW YORK, May 5, 1897.

LALANCE & GROSJEAN MFG. CO.:

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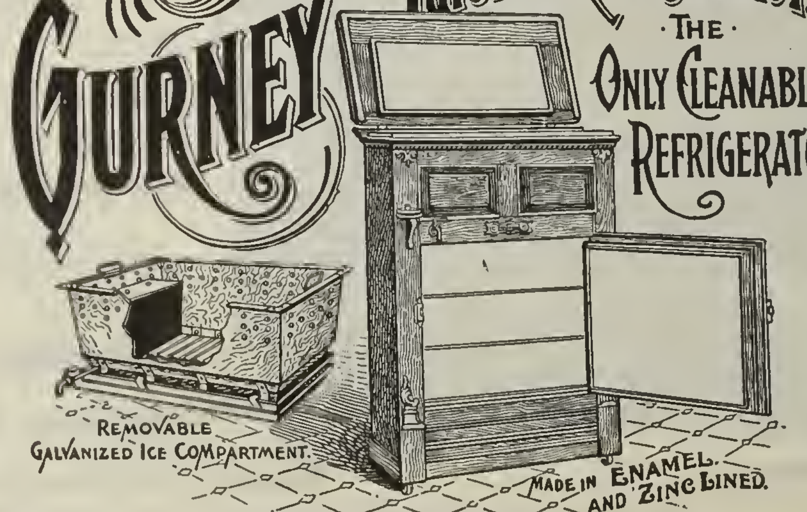
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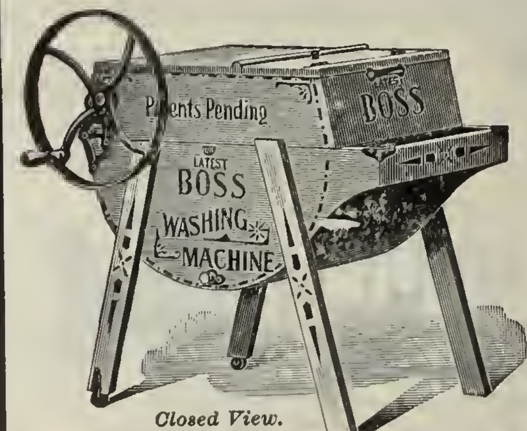

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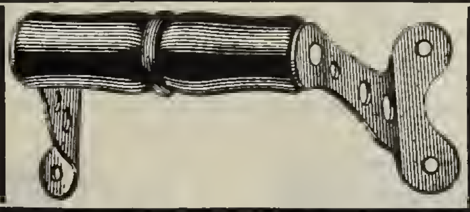
THE HIGHEST IN QUALITY.		WRITE FOR PRICE.
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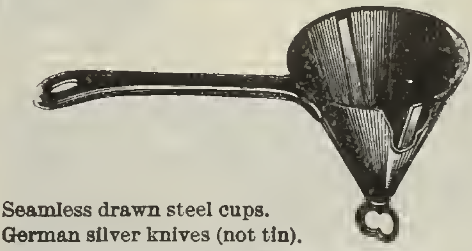

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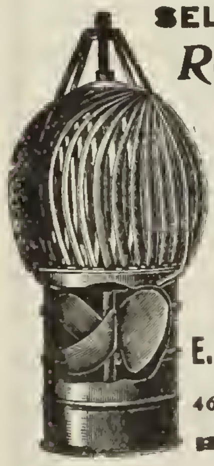

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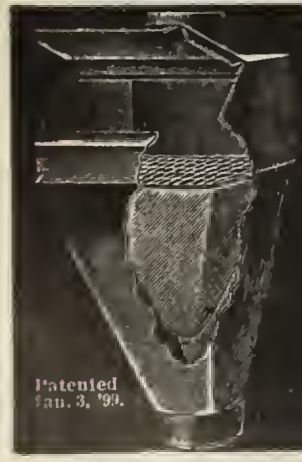

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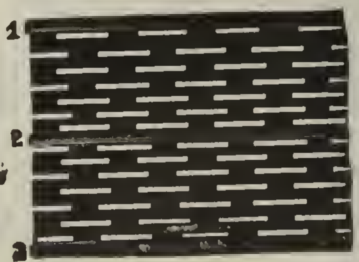

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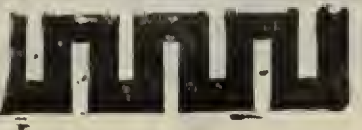

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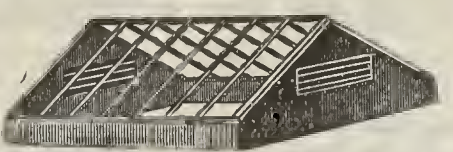

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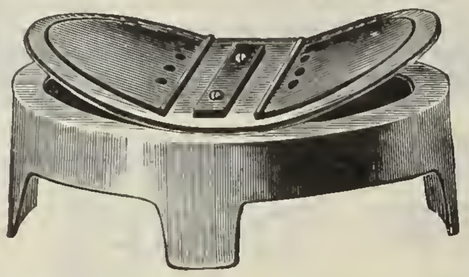

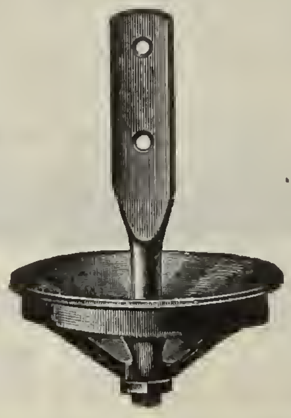

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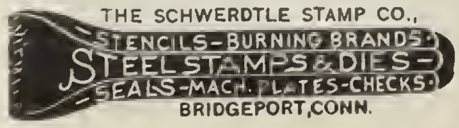

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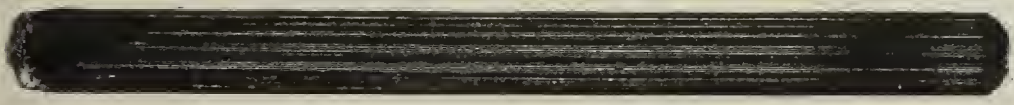

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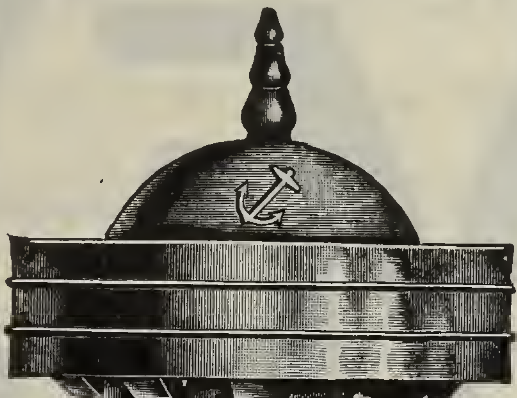

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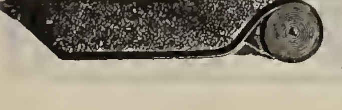

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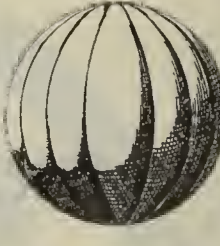

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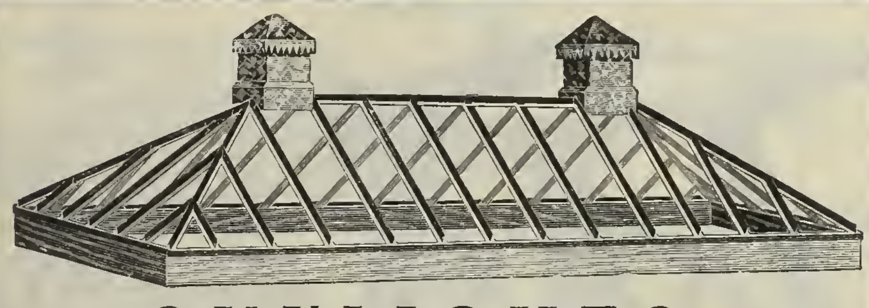

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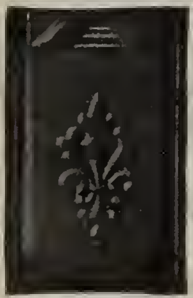

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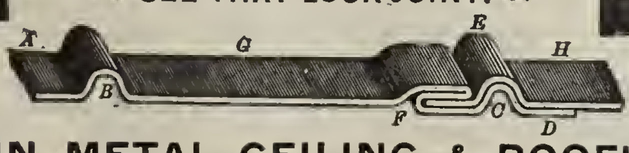

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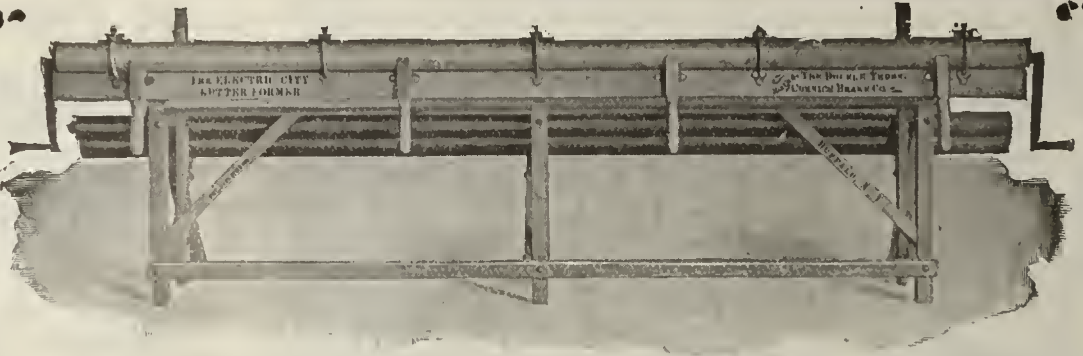

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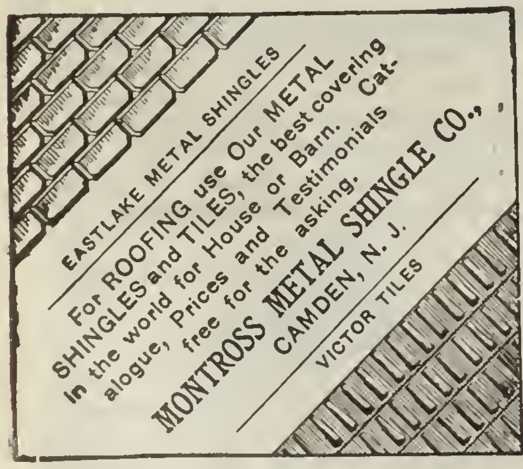

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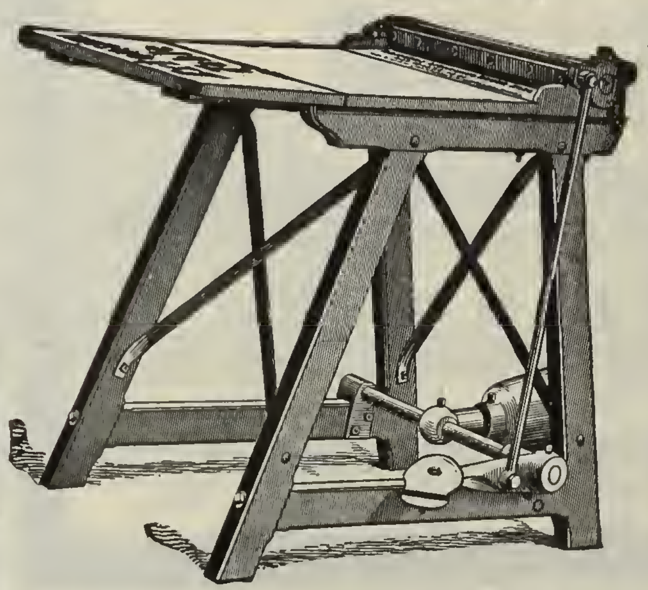

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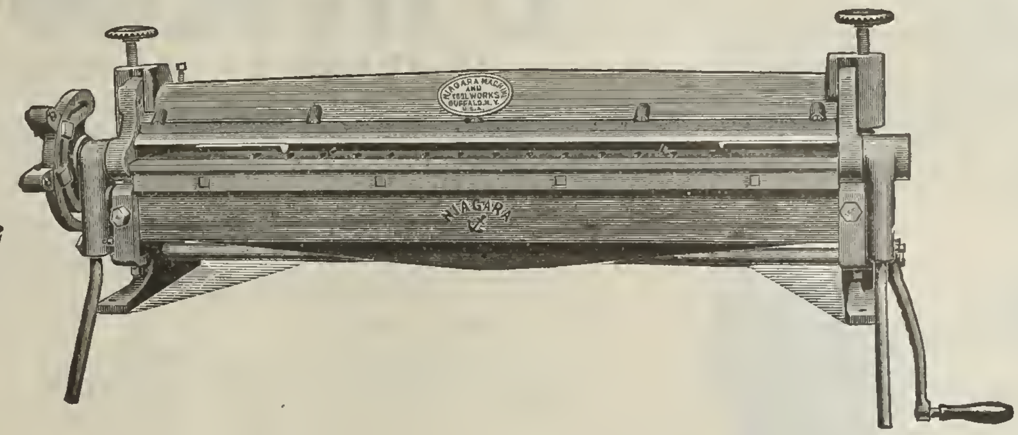
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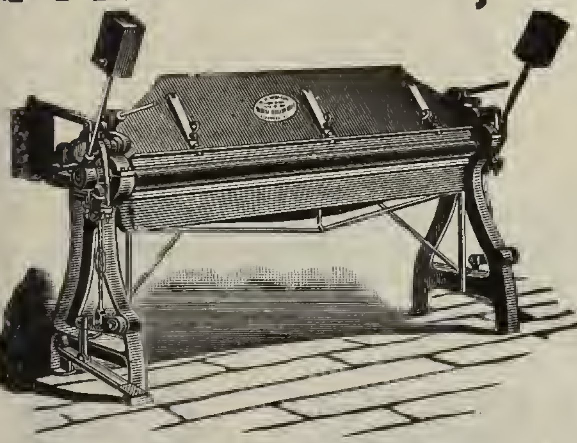

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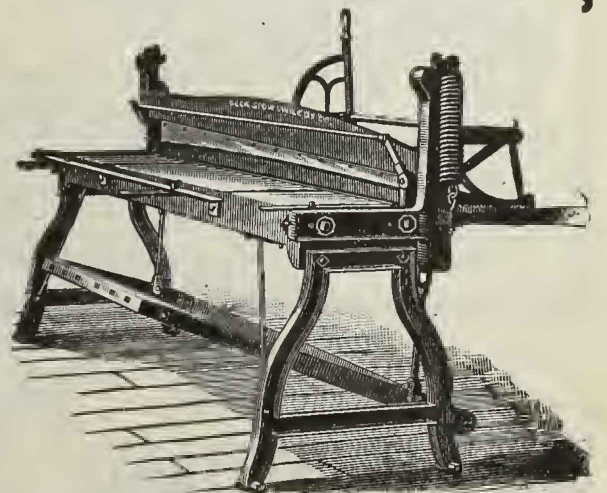

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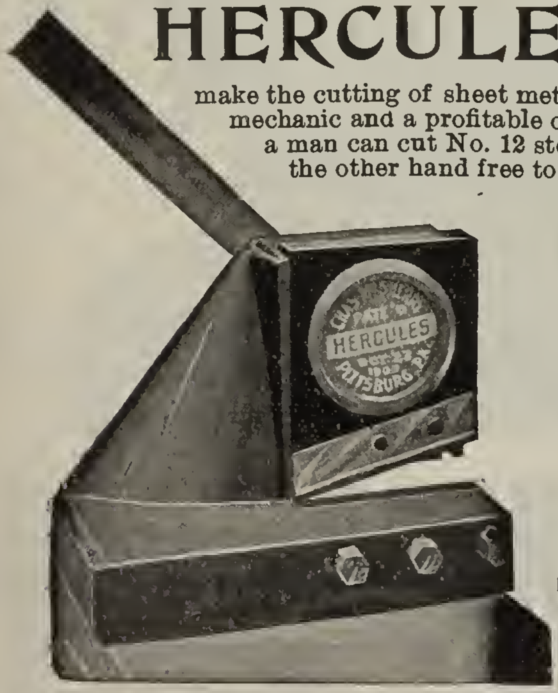

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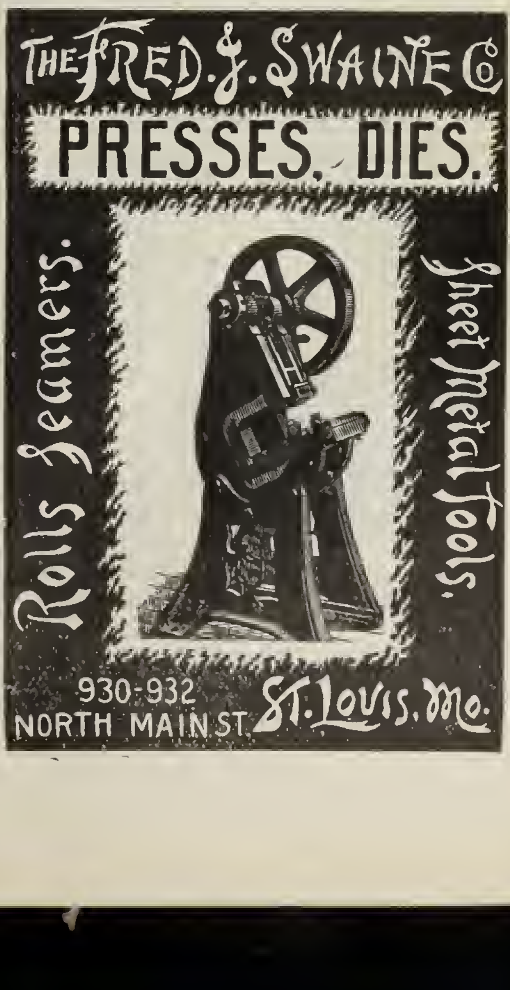

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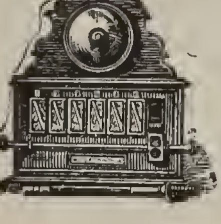

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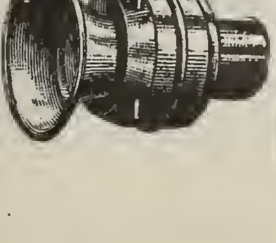

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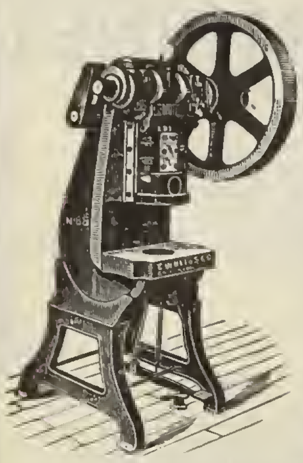

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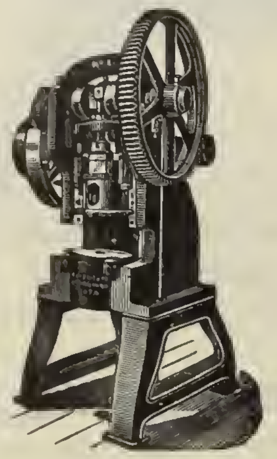

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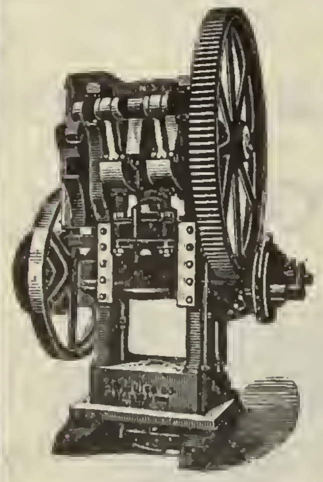

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Made in over 15 sizes, weighing from 5,600 to 150,000 lbs.

PRESSES FOR ALL KINDS OF DRAWING OPERATIONS.

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We have been **AWARDED** the **GRAND PRIZE** at the **PARIS EXPOSITION** of 1900 for the **Unsurpassed Excellence of our Machinery.**

With our greatly increased foundry facilities we are now in a position to furnish a superior quality of castings in dry sand, green sand and loam, up to 30 tons in weight. We solicit orders for this kind of work.

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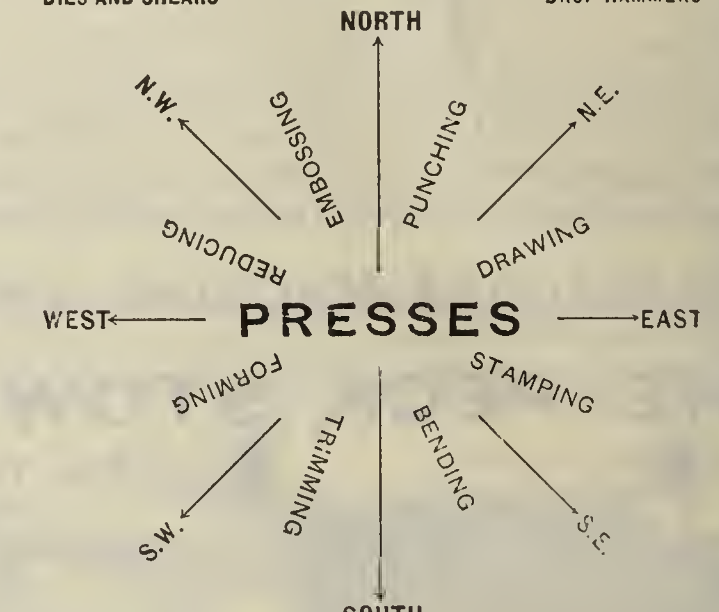

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Correspondence Solicited. **Estimates Furnished.**

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Gray's Perfect SKYLIGHT PATTERNS.

Made on Heavy Blue Print Paper.

Any tinner or cornice man, with a brake and a set of Perfect Skylight Patterns and chart, can make a **Hip Gable or Single Pitch Skylight.**

Write for illustrated Skylight Pattern Circular and Prices, also for blue print sample section of Hip and Gable Skylight. Address

G. L. GRAY,
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Manufacturers of all kinds of

Metal Workers' Machines,

BRAKES

(ALL SIZES)

Heavy and Light

Squaring Shears,

Punches, Presses, Sheet Steel Lath Machines, Drop Presses, Draw Benches and ***Special Machinery*** of all descriptions.

Improved Shear and Gang Punch.

I close your eave trough and make them frost proof, and look neat.

Buy a pair of Bishop's Eave Trough End Formers. Order from any jobber or from me; price $1.00.

G. E. BISHOP, Dowagiac, Mich.

POWER SHEAR

For Squaring, Trimming and Slitting No. 6 Or Plates and lighter Gauges. Made in Lengths up to 11 ft.

The most practical and powerful shear on the market. Has all improvements. Write for circulars descriptive of this and 100 other sheet metal working tools.

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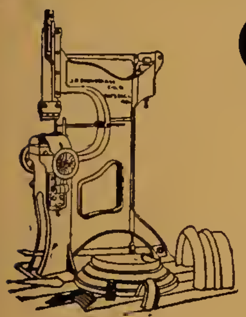
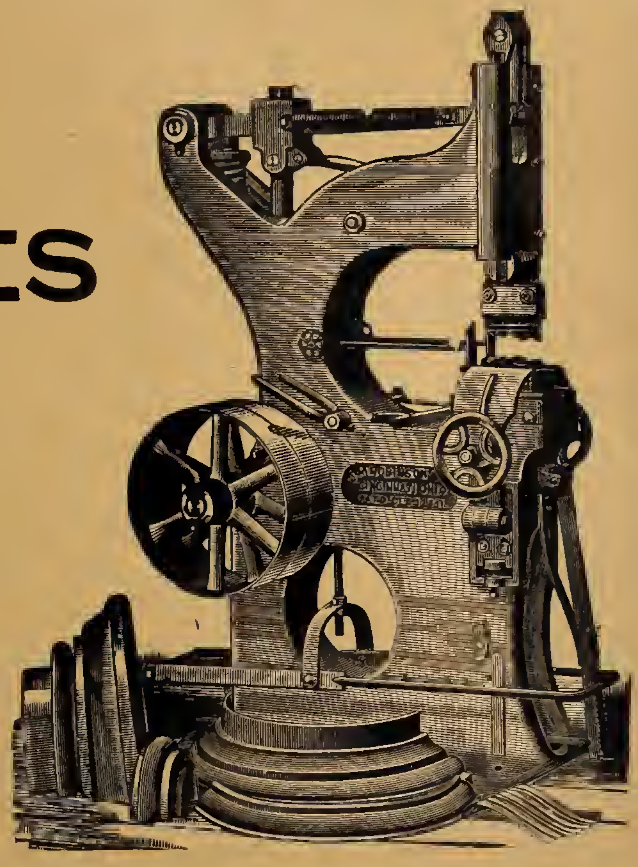


CURVED MOLDING MACHINES



For making every style of sheet metal curved moldings quickly, cheaply and accurately. The hammer gives a perpendicular blow entirely preventing the drawing or twisting of the material while being formed.

The J. M. Robinson Mfg. Co.

325-331 W. SECOND ST., CINCINNATI, O.

HAND POWER LEVER SHEAR.

GEO. C. KEENE & CO.
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Will shear as heavy as No. 10 Gauge Steel or Iron. Very powerful, strong and low in price.

Geo. C. Keene & Co.

Mfrs. The Keene Brake.

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SHOVEL MACHINERY

We build complete equipments and control the latest patented machines for this work.

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We make the very latest improved machinery for manufacturing cans and pieced tinware.

STEEL RANGE MACHINERY.

Recognized leaders for machinery and dies for oil and gas stoves, and gas and steel ranges.

For further particulars write

THE TOLEDO MACHINE & TOOL CO., Toledo, Ohio, U. S. A.

SELIG-SONNENTHAL & CO., Agts., London, England.

NO. 2 FOOT PRESS

Has 18 in. throat, punches ⅛ in. holes in ⅛ in. stock. Can punch up to 2 in. holes in thin stock. Worked by foot or hand power or both. Horn allows for punching pipe; also has gauge for spacing holes.

Good one and always gives good satisfaction. Send for price.

R. M. CLOUGH, - - Tolland, Conn.

BEST HAND AND POWER MACHINERY FOR RANGE & SHEET IRON WORK

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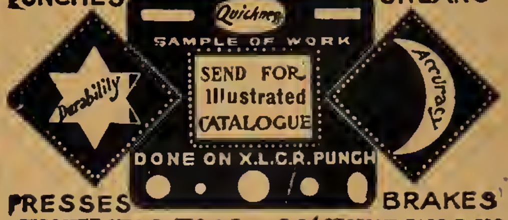

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★ SAWS ★

Our Star Hack Saws are now used in nearly all Iron-working Shops the world over. They are equally useful for farmers and men in all departments of life. They will cut iron and wood equally well. A nail does not dull them at all. One blade, which costs five cents, will cut off an inch square bar of iron 200 times without sharpening. We have cut off such a bar 387 times with one blade. All hardware dealers will furnish these saws. If not, we will send one steel frame and six blades by mail, prepaid, on receipt of $1.00.

All good blades are stamped with a ★

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Contentment is a Jewel.

And when found in the kitchen it is priceless. The Housewife is always contented with her ***BAY STATE RANGE*** because ***it Bakes, Broils and Roasts*** to perfection.

MORAL :—Handle Bay State Ranges and keep peace in the family.

Barstow Stove Company
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If you have never worked any Taylor Old Style we want you to give it a trial. Your experience as a roofer is incomplete until you have used the best.

N. & G. TAYLOR CO.
Sole Manufacturers
PHILADELPHIA

FOR STOR WINDOWS
FRINK'S WINDOW REFLECTOR
is the ideal and only perfect light for show windows. Being installed by leading stores all over the country. Circular and 200 references on request.
I. P. FRINK, 551 Pearl St., New York.

L. & R. WISTER & CO.,
Bullitt Building, Philadelphia.
Dunbar Foundry Pig Iron.
Dunbar Connellsville Coke for Foundry Use.
American Sheet Iron Co.'s Sheet Iron.
American R. G., cleaned of uniform black color.
Dealers in all kinds of Iron and Steel Scrap.

BRUCE & COOK
TINNERS' TOOLS and MACHINES.
TINNERS' SUPPLIES
186, 188 & 190 Water Street, a
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Ideal Sap Spou
Are made open or closed, and a full line of other Maple Sugar goods. Send for dealers' price list.
CHARLES MILLAR & SON CO , Utica, N.

HUB RANGES

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If you want the best line; the line with the **most attractive** and progressive selling features, look into the merits of the
Hub
Line of Ranges
Steam and Water Heaters;
Hot Air and Combination Furnaces.

SMITH & ANTHONY CO., Boston.

Shoddy Goods

Are goods that the retail merchant is obliged to partly finish and tinker over before they are satisfactorily sold. There are some stove merchants who pretend to believe that because the first cost is less the shoddy line is cheaper, but everybody knows that to-day the most successful merchants in stoves sell reputable goods, and for twenty years the standard Line for quality, has been — the

GLENWOOD
Write the Weir Stove Company, Taunton, Mass.

SOLDER
Our Various Brands:
ADMIRAL,
FORT PITT,
FREEHOLD,
Are made from strictly New Metals and the Proportions Guaranteed.

McCLURE & CO.,
Manufacturers of Tin Plate,
PITTSBURGH, PA., 211, 213 and 215 Second Ave.
PHILADELPHIA, PA., 115 North 7th Street.

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The Metal Worker

A WEEKLY JOURNAL OF THE
ROOFING, STOVE, CORNICE, TIN, PLUMBING AND HEATING TRADES.

With which is Incorporated The Stove and Tin Trade Journal, the Sheet Metal Builder, and Metal.

, LVII.
BER 15.

NEW YORK AND CHICAGO, APRIL 12, 1902.

ONE DOLLAR A YEAR.
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PIPE WRENCH.
Vith a GRIP that GRIPS without
Marring the Pipe.
o. 1 Grips up to 1 Inch. No. 2 Grips up to 2 inches.

OUR
CATALOG
OF
ENGINEERS'
AND
STEAM
FITTERS'
TOOLS
WILL
INTEREST
YOU.

ALWORTH MFG. CO. *Boston, 128 Federal St.*
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The Gorton Side Feed Boilers
FOR STEAM AND HOT WATER HEATING.
INVESTIGATE FOR YOURSELF.
Send for Catalogue and Prices.
GORTON & LIDGERWOOD CO.,
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McLEOD & HENRY CO.,
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AMERICAN STEAM and ALTITUDE GAUGES, POP SAFETY VALVES.
Heating Specialties. American Steam Gauge & Valve Mfg. Co., Bismark St., Boston, Mass., U. S. A.

A Coolness.

An icy coolness will exist between you and the man to whom you sold the wrong furnace To thaw him out, literally and figuratively, put in a **PARAGON**. It means a warm house for him, a warm friendship between you, and a snug addition to your bank account. **EXCELSIOR RANGES never fail.**

ISAAC A. SHEPPARD & CO.,
NEW YORK. PHILADELPHIA. BALTIMORE.

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York
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and Steel Sheets
and Galvanized
and Painted
Corrugated and
Crimped

o Best Bloom Galvanized Sheets
ewees Wood Company's
shed Iron
ewees Wood Company's
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ville Polished Steel Sheets

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and TOR VALVES, TRAPS, AND WATER ING VALVES, TEMPERATURE No. 1 DAMPER REGULATORS
NOISELESS BACK PRESSURE VALVES, PUMP GOVERNORS, STEAM and OIL SEPARATORS CONTROLLER and
IELEY AND MUELLER,
V. 13th St., - NEW YORK.

"STEWART"

spells perfection in stoves. For eighty years they have given thorough satisfaction. They are easy and quick sellers.

FULLER & WARREN CO., Troy, N. Y.
This Ad. changes every week.

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Silver, Nickel Platers and Brass Goods Mfrs.
MATERIAL FOR DRYING PURPOSES.
Write for prices to John Sommer's Son, 355-365 Central Ave., Newark, N. J.

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GLOBE and ANGLE VALVES, IRON and BRASS.
All working parts renewable without taking the valve from piping. All parts interchangeable. Guaranteed not to leak at high pressure. Send for circular.
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JENKINS IMPROVED AUTOMATIC AIR VALVES.

Suitable for high or low pressure. Take no more room than an ordinary air cock. Endorsed by the leading steam experts as the best made and the quickest working. All genuine stamped with our Trade Mark.
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328-330-332 Second Ave.,
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Galvanized and Black Sheets.
Sheet Copper, Conductor, Eave Trough.

Our sales of
Follansbee Pure Iron Old Style
increasing wonderfully; it
is Iron Base, not steel.
Makers Scott's Extra Coated
and other Tin Plates.

Philadelphia, 133 Arch Street.
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READ OUR "AD"
Page 8.
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Boston.

ROUND OAK
STANDARD OF AMERICA

It never does any harm
to reiterate a fact
and to impress it
on the minds
even of those
who already know it.

Hence—
we say again
to the stove dealer
who lives in a town
in which there is
no agency
for the sale of the
genuine Round Oak:

"Here is the best
heating stove
for any kind of fuel
made in the world;
here is a stove
that needs but
to be introduced
by the sale
of one or two stoves
to make its own way
ever after."

There is "a plenty"
of the
"just-as-good" kind
but only one
Round Oak.

Is your town open?

Estate of P. D. Beckwith
Dowagiac, Michigan

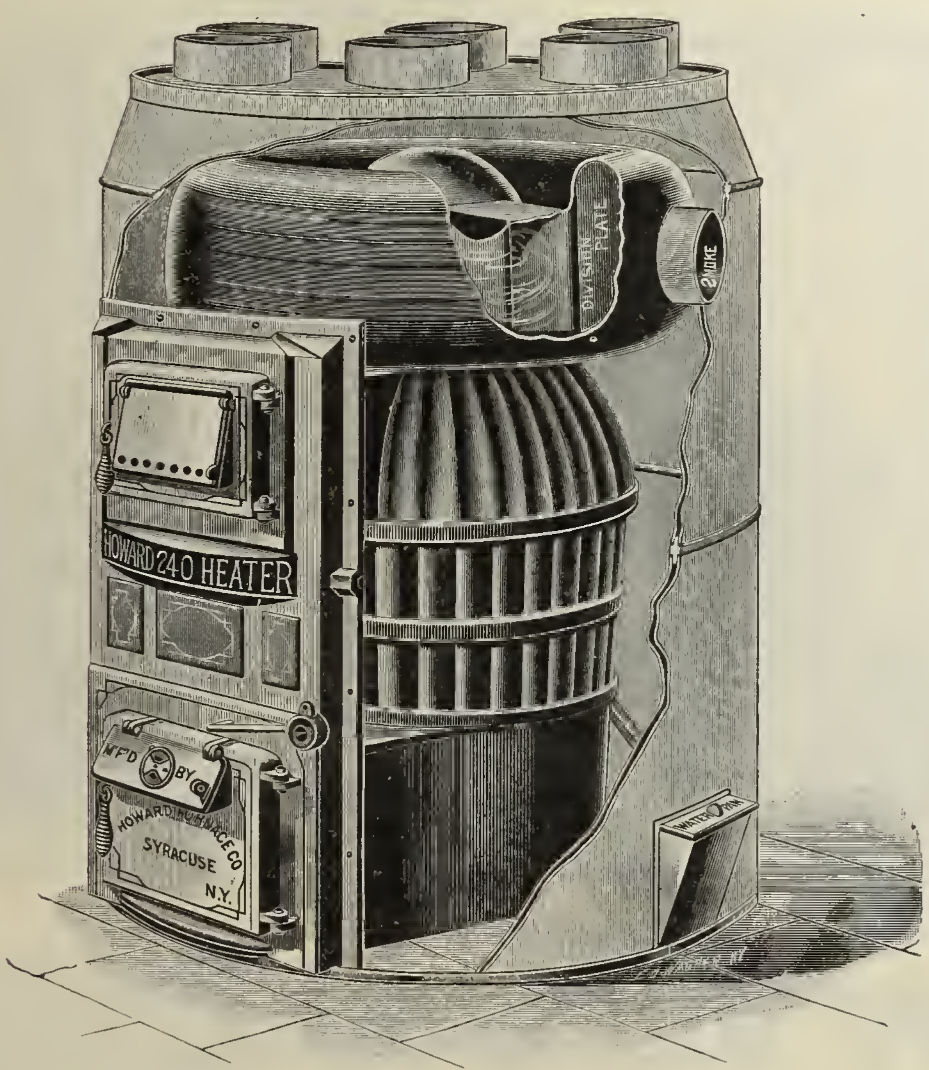
MAKERS OF GOOD GOODS ONLY

☞ DON'T LAY IT ALL TO POPULAR DEMAND. YOU CAN GET GOOD GOODS IF YOU WILL. ANY MAN CAN SEE THE VALUES IN A HOWARD FURNACE.

THE HOWARD
IS
DIFFERENT.

Howard Heaters

Are Efficient.



200 Series—All Cast Iron.

The reputation of "The Howard" is established, secure. They have been widely sold, and subject to hard tests. Yet we do not know of a single case where the purchaser has regretted his selection.

THIS IS COLD FACT—THINK IT OVER.

CATALOGUE OF OUR ACETYLENE GAS MACHINE WILL INTEREST YOU.

International Heater Co.,

UTICA, N. Y.

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LARGEST MAKERS OF HEATING AND LIGHTING APPARATUS IN THE WORLD.

Moore's STOVES & RANGES

A RELIABLE THERMOMETER

In a house, is useful in regulating the winter's heat. It is many times more useful in determining and regulating the wide range of temperatures required in an oven. Our Thermometers are the best made. We guarantee them to be reliable and recommend their use. They will more than give satisfaction.

JOLIET STOVE WORKS,
JOLIET, ILL.

HOLBROOK, MERRILL & STETSON, San Francisco, Sacramento and Los Angeles.

39

MARION CINDERELLA
CLEANOUT
THE PITTSBURGH STOVE & RANGE CO.

Cinderella
Steel Ranges
REPRESENT
The Best Materials,
The Best Construction,
The Best Workmanship.
THEY ARE
The American Standard for Excellence.

ALL STYLES AND SIZES AT
MODERATE PRICES.

We would be pleased to send our catalogue.

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PITTSBURGH STOVE & RANGE CO.,
PITTSBURGH, PA.
WESTERN SALES AGENT,
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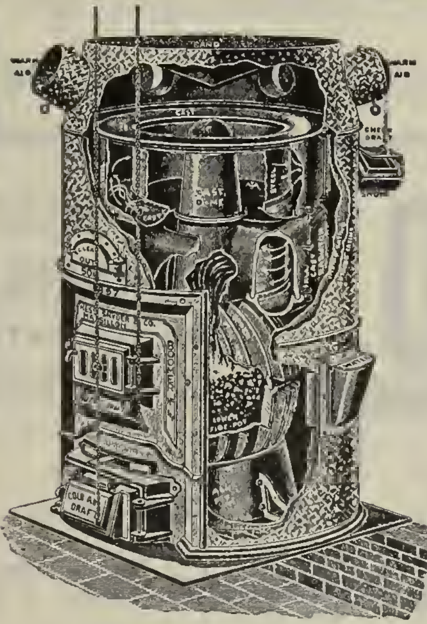
REGARDING
Boomer Furnaces.
OR
Boomer Steel Ranges

We want to state in strongest terms possible that if you want the
HEAVIEST,
MOST DURABLE,
MOST ECONOMICAL
and easiest to take care of Furnace or Steel Range, buy a BOOMER.



Boomer Furnace.

Neither time nor money is spared to make them the Best.
Buy Boomers and save your coal bills.
We invite investigation.

THE HESS-SNYDER CO.,
Manufacturers, MASSILLON, O.

Boomer Steel Range.

OUR CATALOGUE,

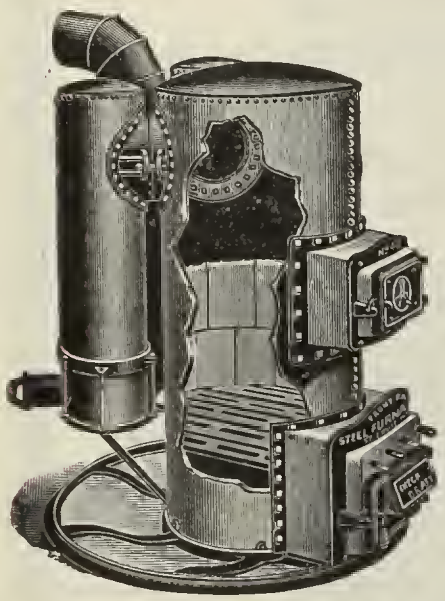
SHOWING

GAS RANGES
CAST RANGES
STEEL RANGES
STEEL COOKS
HOT PLATES
CAST and STEEL HEATERS

WILL BE FURNISHED FOR THE ASKING BY

Enterprise Stove Co., VINCENNES, IND.

A FEW POINTS OF SUPERIORITY



Fire pots are of fire clay tiling and never burn out.
Radiator surface in proportion to grate surface unusually large.
Only absolutely gas tight furnace made.
Novelty of construction makes an easy seller.
Tested for fifteen years.

Repairs are seldom necessary.
Are guaranteed to burn hard or soft coal.
No direct draft to warp out of shape, nor packed joints to leak gas.
Katalogue and prices will be mailed you upon application.

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REFRIGERATORS,
BLUE FLAME OIL STOVES,
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LARGEST JOBBERS
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FOR ALL GASES.

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STEAM BOILERS (8 SIZES), 550 SQ. FT. RADIATION SUPPLIED.
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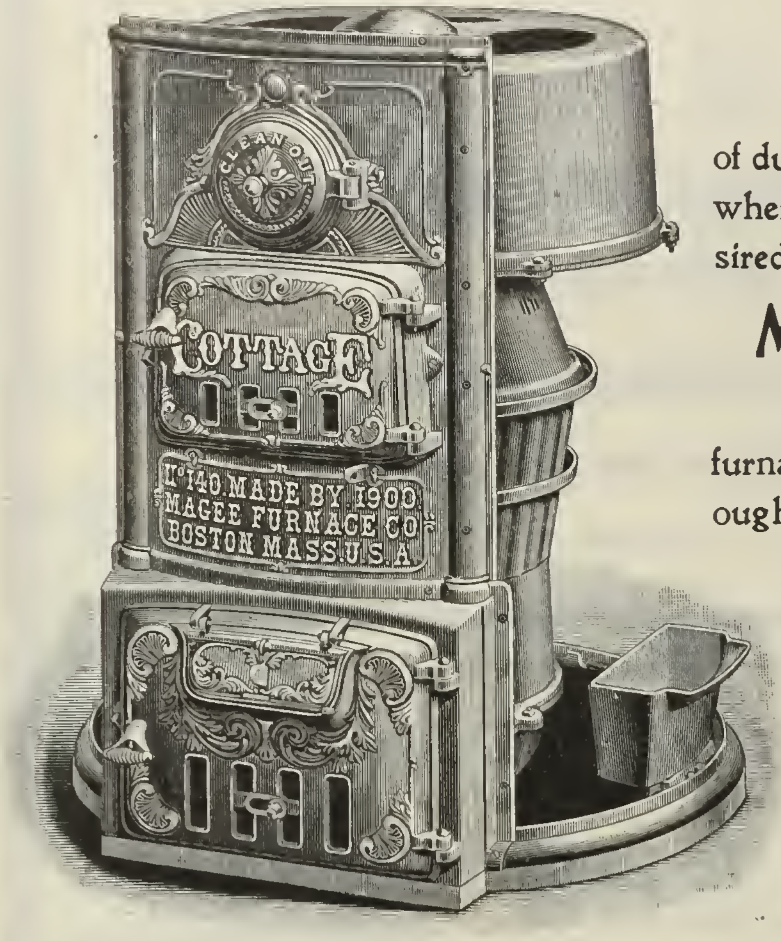
510 ARCH STREET,
PHILADELPHIA.

Specially Constructed for Low Cellars. Fitted with Cast Iron Return Flue Radiator, giving Liberal Flue Capacity without Decreasing Warm Air Chamber.



MOST COMPLETE LINE UNDER ONE NAME IN THE UNITED STATES.

IF IT'S A QUESTION OF PRICE.

In order to meet the demand for a furnace of durable construction and powerful radiation, where a high-class furnace at a low price is desired, we manufacture the

Magee Cottage Furnace.

It isn't a CHEAP furnace, but it's a GOOD furnace. Its castings and other parts are thoroughly well made and sufficiently heavy to stand the strain subjected to them by the fire.

CAST TO LAST.

SEND FOR FURNACE CATALOGUE.

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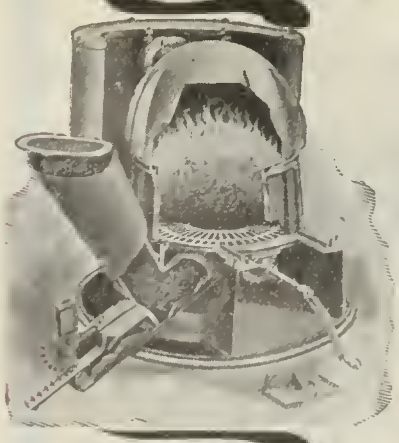
For a swell job

You ought to know our line—many a dealer loses an opportunity to make a good profit because he knows only heating stoves and furnaces.

We can post you concerning steam and hot water heating, so you can get a share of what is due you.

KEWANEE BOILER COMPANY
KEWANEE, ILLINOIS.



IF YOU ARE NOT SELLING THE

Peck-Williamson Underfeed Furnace

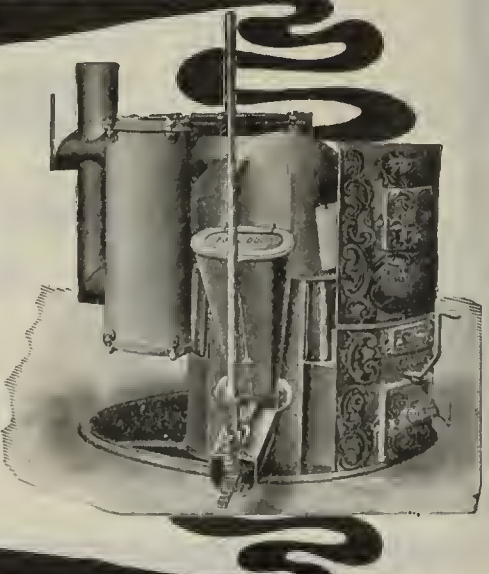
you have not the trade and are not making the money you might. Just a pull or two of the lever feeds the new coal from underneath.

The Underfeed Furnace consumes less fuel than any other furnace ever built. The coal is burnt more slowly. All the heat units from it, as well as from the smoke, are utilized and all smoke eliminated.

Our handsome booklet explains its splendid heating qualities and coal saving.

You may have this booklet and our special plans for selling. Ask for booklet about our Laundry Dryer also.

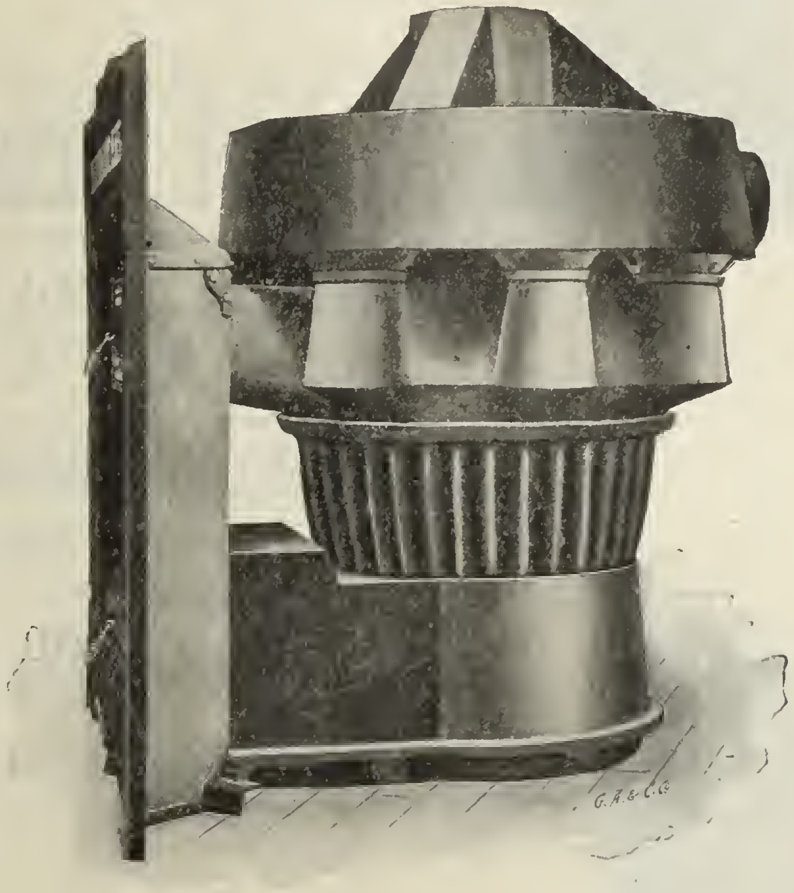
THE PECK-WILLIAMSON COMPANY,
CINCINNATI, OHIO.



BOYNTON SCHOOL HEATER

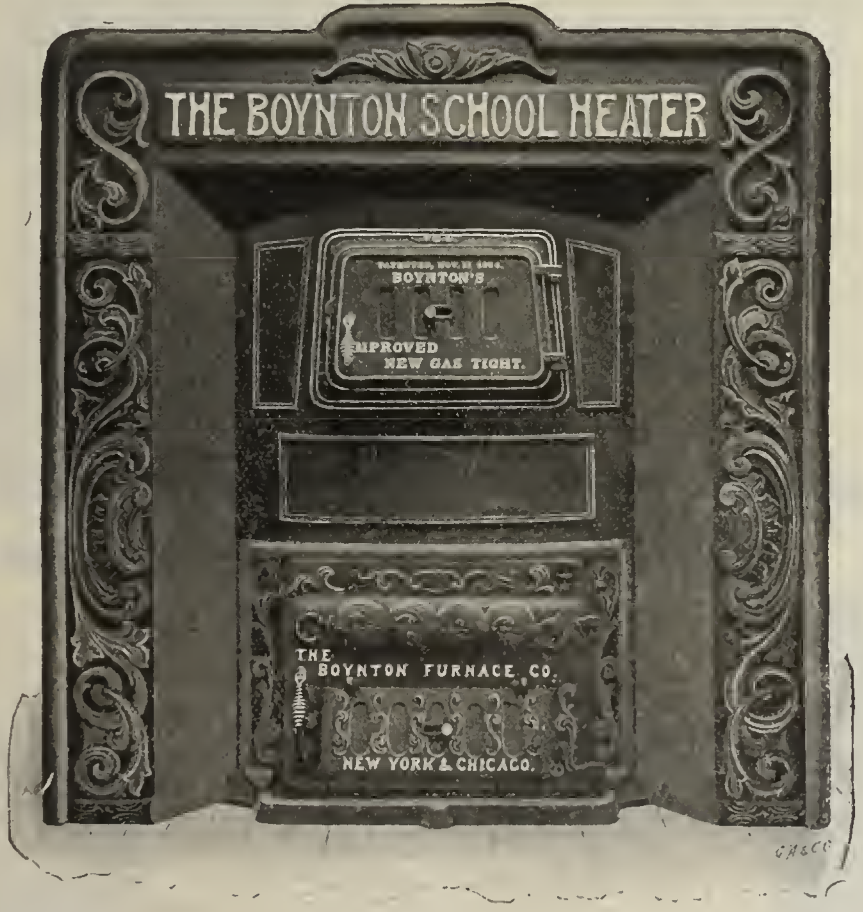
The Boynton School Heater is manufactured for and sold to the **TRADE** only.

It is more extensively used by dealers and heating contractors than any Warm Air School Heater made.



We not only stand behind the heater for its capacity to warm very large volumes of air, but we have at our command the best engineering talent in this line of work to be had; and this important requisite to success is at the service of our customers.

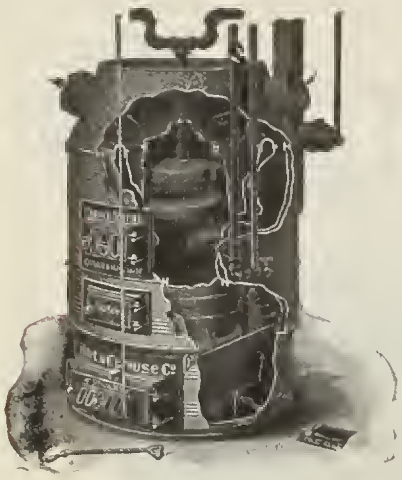
If there are school buildings to be erected or equipped with Heating and Ventilating plants in your vicinity, it will pay you to communicate with us **AT ONCE. DON'T WAIT.**



Of all School Heaters the Boynton is best adapted to the work: It is the largest, the heaviest, the most durable, has greatest radiating surface, is the only self-cleaning furnace, gas, smoke and dust tight, has the best grate, is no experiment, and we but repeat what the school people say of it.

THE BOYNTON FURNACE COMPANY

New York **Chicago**



Royal Heaters.

HART & CROUSE CO.,

235 Water St., New York.
78 Lafayette St., UTICA, N. Y.
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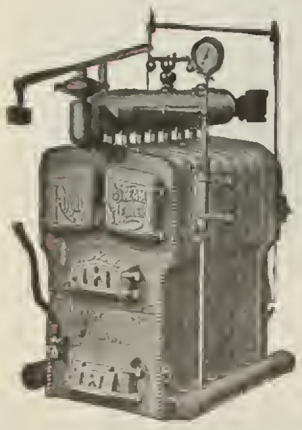
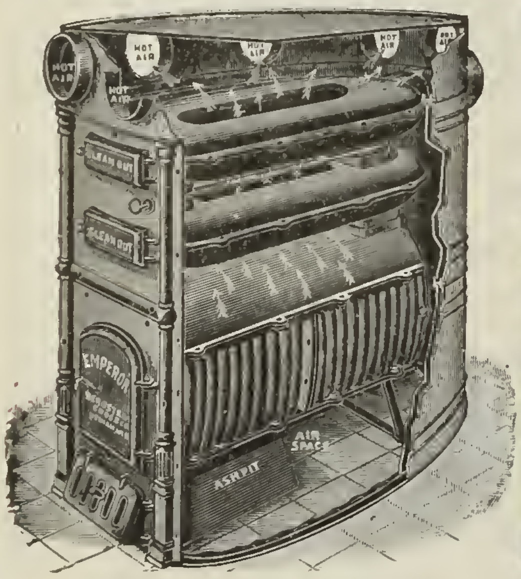
The Leading Line of Heating Apparatus.

HOT WATER,
STEAM,
HOT AIR.





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FOR WOOD.

Simple, Safe, Durable. Economical in Fuel.

The Best and Cheapest Line of Wood Furnaces. . . .
Furnished for either Brick or Galvanized Iron Casing

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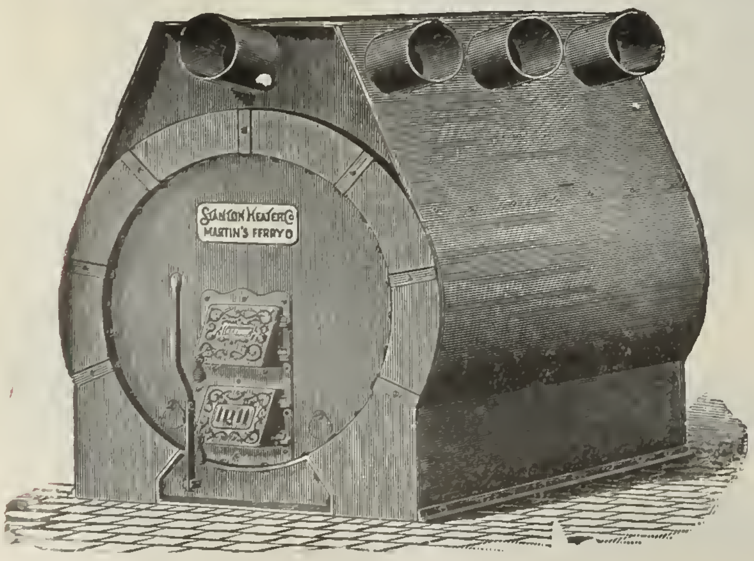
Bergstrom Bros. & Co.

NEENAH, WIS.

The Stanton Seamless Heater,



PORTABLE CASED.

State College, Pa., June 15, 1900.

The Stanton Heater Co , Martin's Ferry, Ohio.

Gentlemen :—The Stanton Heater is giving the best kind of satisfaction. It will produce good heat from any kind of fuel. My average cost of fuel, per month, for the past winter was three tons of coal dust from soft coal to heat 43,000 cubic feet of space with a No. 68 Heater ; however, this space is 3,000 cubic feet over the capacity of your Heater, but the heater did the work easy, and held the temperature in zero weather so it would not change over four degrees in twelve hours without touching the Heater.

The Stanton Heater is, in my judgment, the most modern and economical warm-air generator of this age.

Sincerely yours, J. N. KRUMRINE.

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THE STANTON HEATER CO.,

Martin's Ferry, Ohio.

See Our Advertisement Next Week.

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TRADE MARK

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Our 1902
Boiler Catalogue

handsomely illustrated
and showing a few

New Types of Ideal Boilers.

A Postal card request will secure
for you a copy of the first edition.

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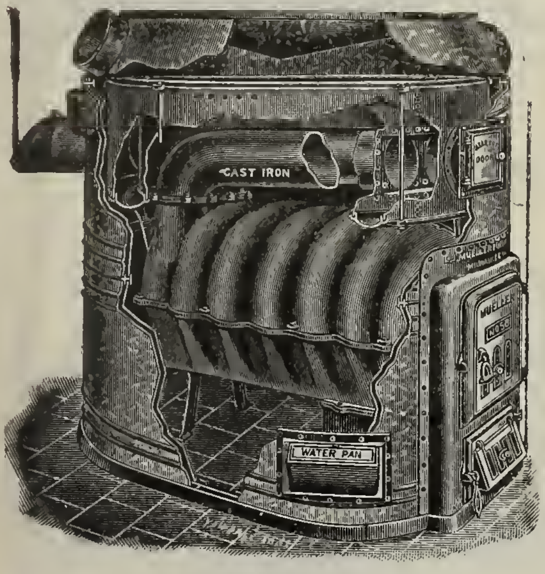

Established 1857.

LET US REMIND YOU
THAT
MUELLER
FURNACES and BOILERS
ARE THE BEST PRODUCED.
DON'T YOU THINK IT TO YOUR INTEREST
TO HANDLE SUCH A LINE?

MADE FOR ALL KINDS OF FUEL.

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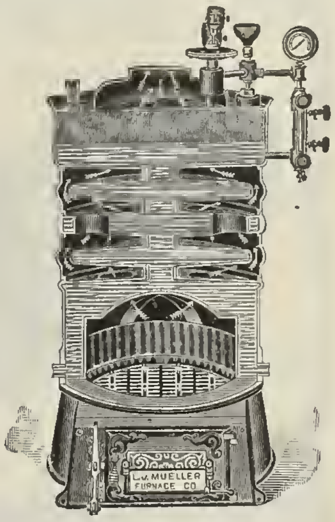
EVERYTHING IN THE HEATING LINE.

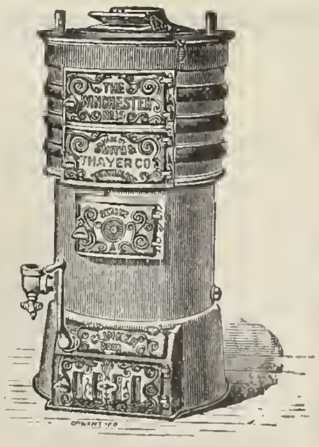

L.J. MUELLER FURNACE CO.

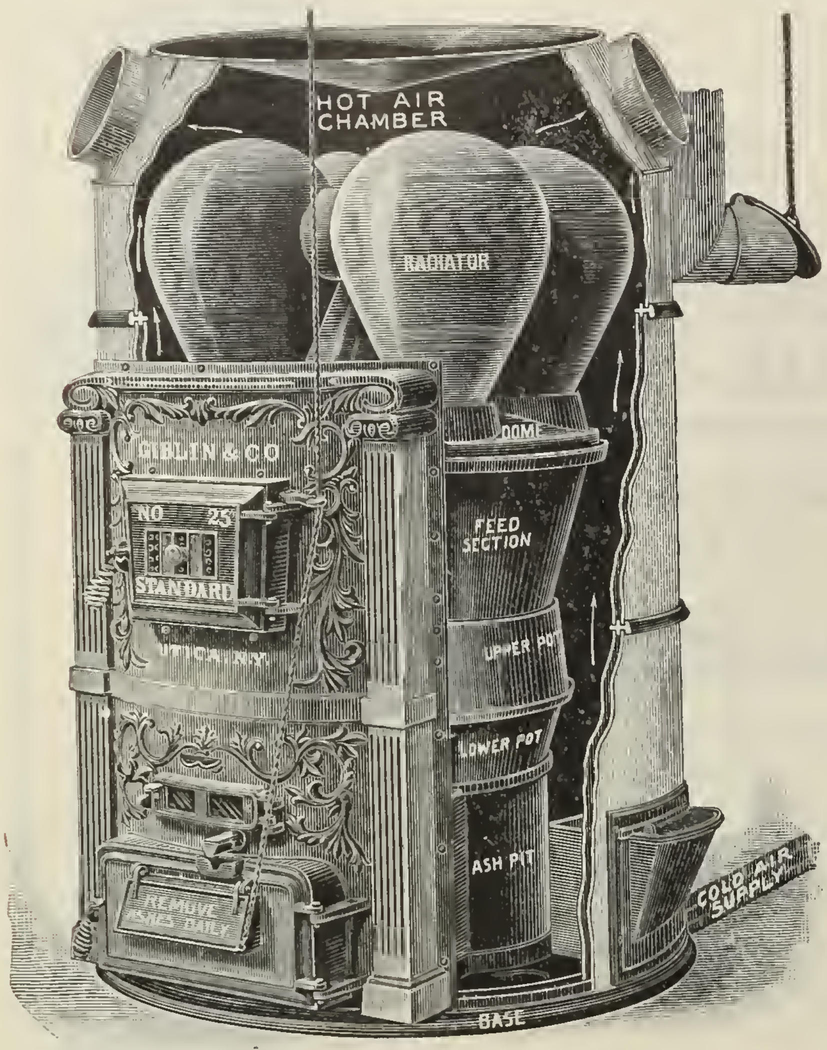
L. J. MUELLER FURNACE CO.,
190 REED ST MILWAUKEE, WIS.

WINCHESTER

Train your will to serve reason, nor be gu'ded by chance. The Tempter says: "Use any heater."—Reason points to a "WINCHESTER," and its record proves the wisdom of Reason's judgment. Made for steam and water, and still at the head. Smith & Thayer Co., Manufacturers, Boston, Mass., 106 Beekman St., New York.

HEATER.





SECURING HEAT

without gas, smoke, or dust can be easily accomplished where the

Standard Furnace

is used. Observe construction of radiator. Four Domes and connection are made all in one casting with no joints whatever.
The form of this casting secures enormous

Radiating Surface

and the retention of the heated air. Eighteen years' experience has thoroughly demonstrated the efficiency of this

All Cast Iron furnace.

Dealers have continued to sell it for each of the 18 years with constantly increasing sales.

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FURNACES **EXCELSIOR HEATING SPECIALTIES** **PIPE**

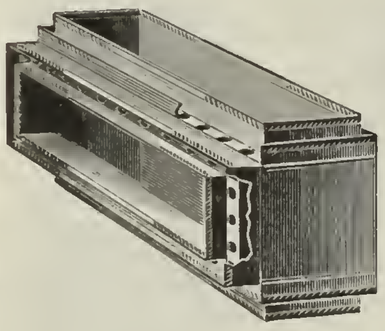
WE ARE MAKING

Very Low Prices

on our full line for present and future deliveries and solicit

Your Inquiries

Our Stove Pipe and Elbows, also Furnace Pipe are the Best made.



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ELBOWS **EXCELSIOR STEEL FURNACE CO.**
38-40 W. MONROE ST.-CHICAGO. **REGISTERS**

TUSCALOOSA FEMALE COLLEGE,
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W. F. MELTON, President.

DIGHTON FURNACE Co.,
Taunton, Mass.

April 2, 1902.

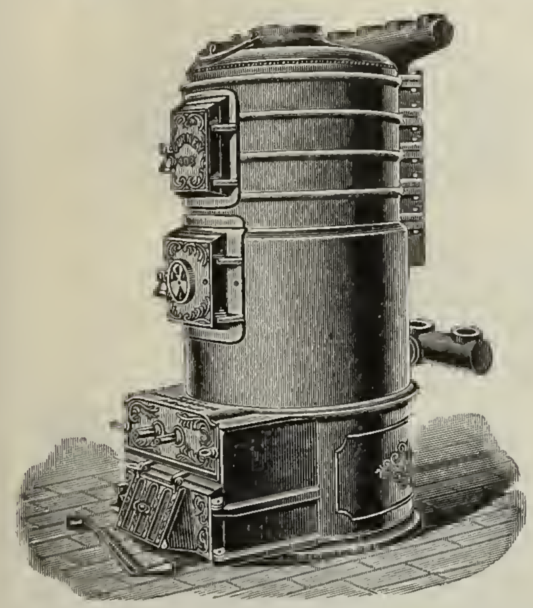
Dear Sirs:—In reply to your kind letter of the 26th ult., I beg to say that the two **"DIGHTON"** Furnaces put in by us last fall have given entire satisfaction, although the winter has been the most severe known in the State for a number of years.

With best wishes, I am,

Yours truly,

W. F. MELTON.

Never Over-Rated. . . . .



GURNEY HEATERS are never over-rated, neither in the estimation of the public nor in our claims for them. They will do exactly the work we say they will do. We declare that **GURNEY HEATERS** have no equal for efficiency, durability and economy. On account of the excellence of their construction they will maintain temperatures longer and require less fuel.

Do you not wish to handle the best? Write us for catalogues, etc.

GURNEY HEATER MFG. CO.,

74 Franklin St., Boston. **111 Fifth Ave., New York City.**

Western Selling Agents, James B. Clow & Sons, Franklin
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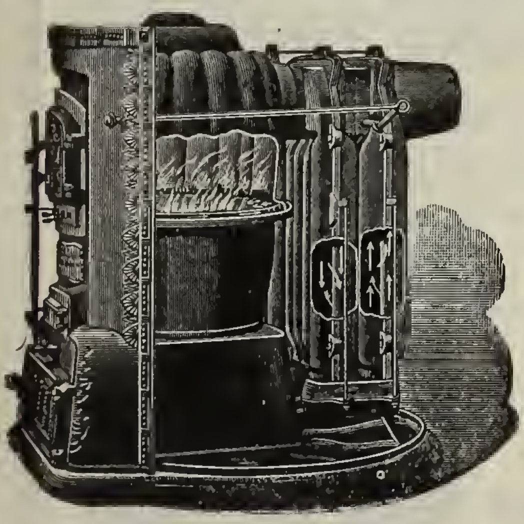
Bengal Furnace



It is totally unlike any other,—a brand new idea in the radiation of hot air. The BENGAL is bound to supersede the old style drum furnace as surely as electric light has gas. And the sooner you investigate the matter the better for your business. Full particulars on application.

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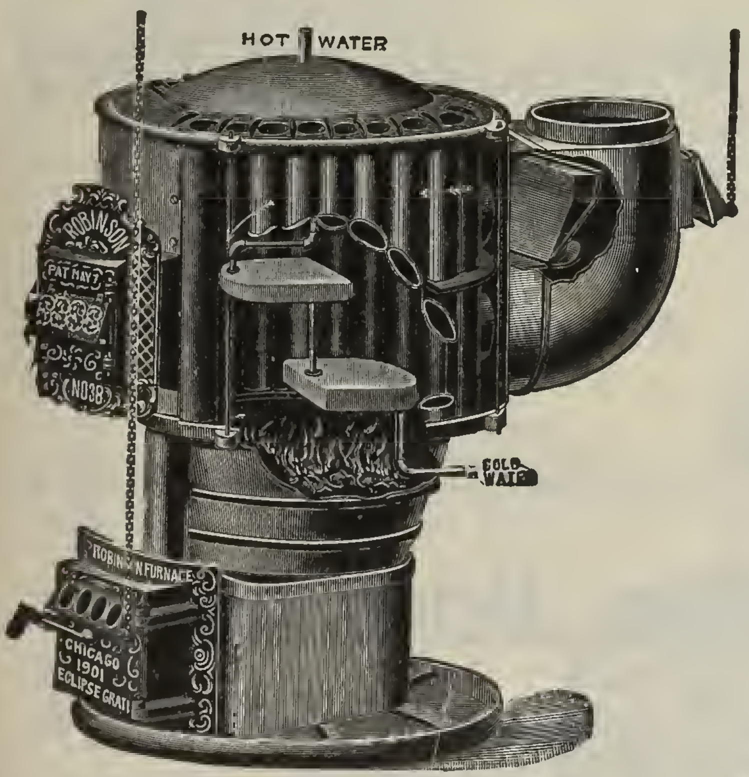
NEW YORK OFFICE, 210 WATER ST., R. W. HILLMAN, Manager.



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give universal satisfaction where-ever used.

They are up-to-date in every respect and have many special features not found in other furnaces.

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HOT WATER
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HOT AIR

HEATING BY COMBINATION STOVES AND FURNACES.

Suitable for Large or Small Houses, Stores, Conservatories, Barber Shops, Hotels, etc., etc.

Heat Water Quickly.
Circulation is Positive.
No Joints Inside to Leak.

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160 RIVER ST., NEW HAVEN, CONN.

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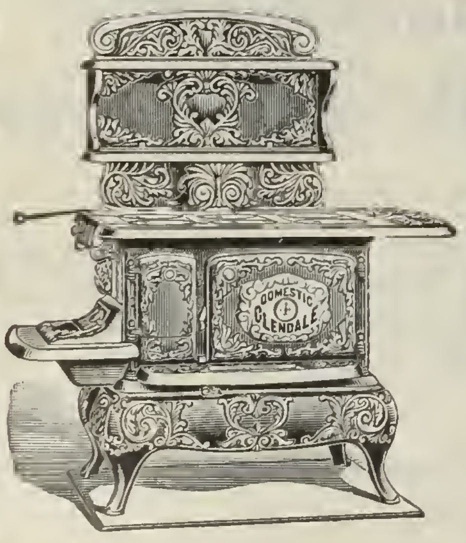
Stoves and
Ranges



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SCRANTON CORUNDUM
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OUR "BLACK DIAMOND"
artificial abrasive wheels are especially adapted for
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THEY ARE THE BEST.

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MAKERS OF

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HOT-AIR AND COMBINATION AIR AND
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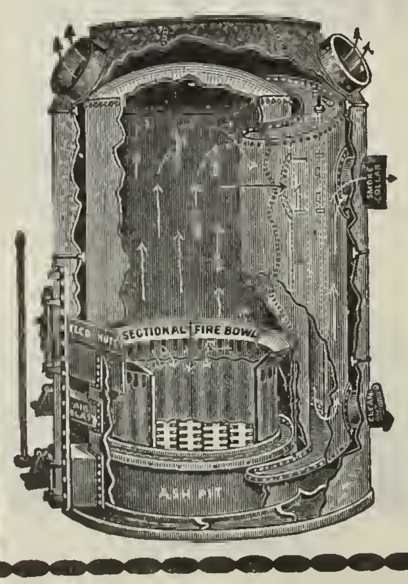
LAUNDRY STOVES CONFECTIONERS' STOVES
CABOOSE RANGES ETC ETC

STAMFORD CONN

The Torrid Zone Furnace



is a trade winner because it has points of merit peculiar to itself that can be found in no other steel furnace. Our new catalogue is now ready to mail and a description of our Hot Air and Hot Water Combination Furnace can be seen in it. We furnish either the cast iron lining or the fire brick at the same price. Our Wood Furnace is called a powerful heater by those who use it.

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Portable OVENS
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OVENS FOR Bakers, Confectioners, Hotels, Etc.
Made in all sizes, single and double, for coal, wood, natural or artificial gas.
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JULY 19, 98
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A perfect, all cast WOOD or COAL burner. There is no other Hot Air Furnace as low down as the "BRIEN."

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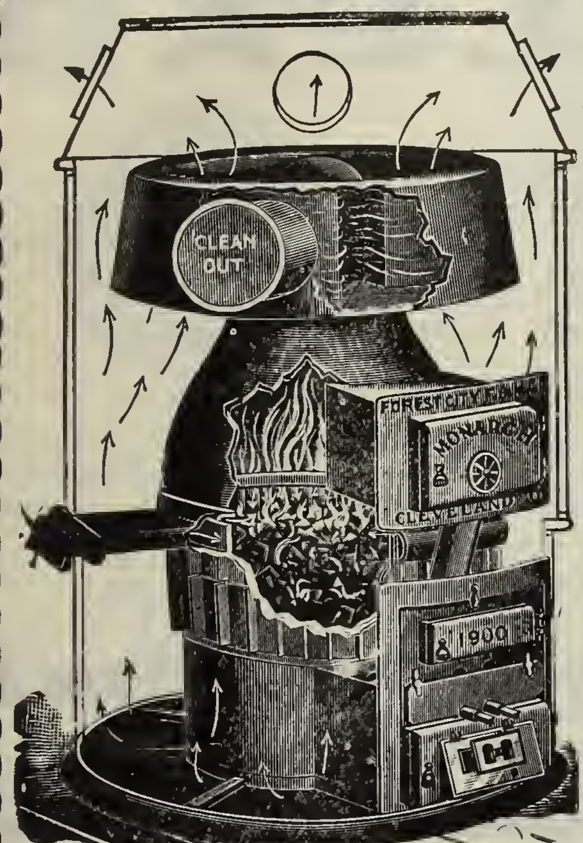

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All Cast Iron.
For Hard and Soft Coal.

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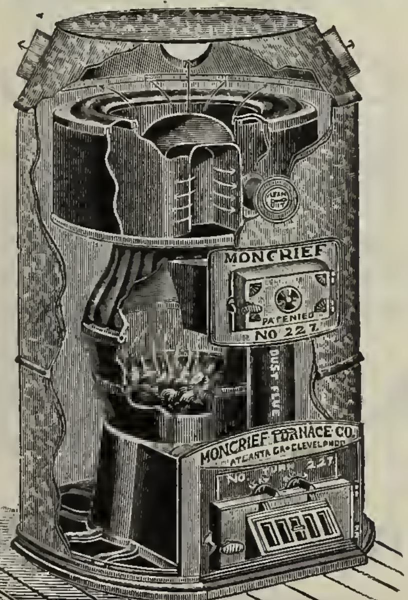
Gray Iron Castings to order. High grade only.



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Unequalled in the Great Essentials---Simplicity, Durability, Economy, Capacity, Comfort.

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IT ALMOST TAKES CARE OF ITSELF.
IT HEATS YOUR HOUSE FROM CELLAR TO GARRET WITH LITTLE FUEL.

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BOILERS and RADIATORS

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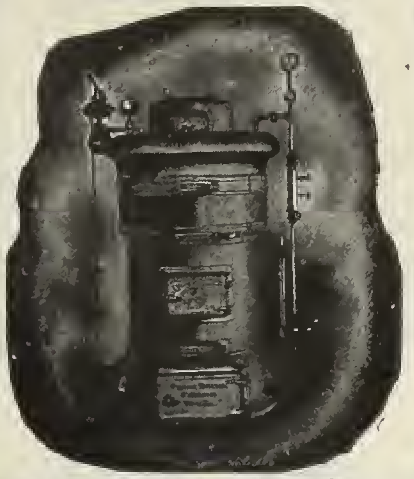

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ECONOMIC IN FUEL CONSUMPTION.

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The Champion Hot Water Combination Boilers.

They Fit Any Furnace.

Base section when used without ring sections.

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These Boilers are made in three sizes diameter, and from 100 to 600 square feet radiation capacity. Will heat those cold rooms, or an addition to the building. Will increase the capacity of any furnace. Are cheaper than coils and will do more work.
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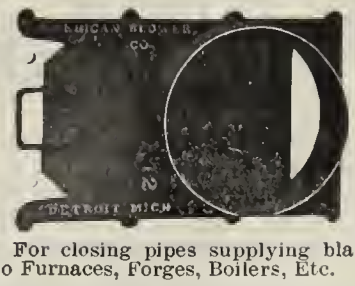

For closing pipes supplying blast to Furnaces, Forges, Boilers, Etc.

Simple, Inexpensive, Reliable.

Send for particulars.

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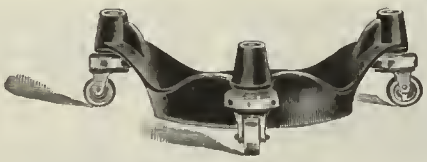

Better than a truck, as they fit any size of stove without adjustment. Made with roller bearing or plain casters. A postal brings prices.

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STOVE BANDS —AND— RINGS.

SPECIAL TUBING.
Cut to Length and Plated.
FLAT STRIPS & CORNERS.
SPECIAL
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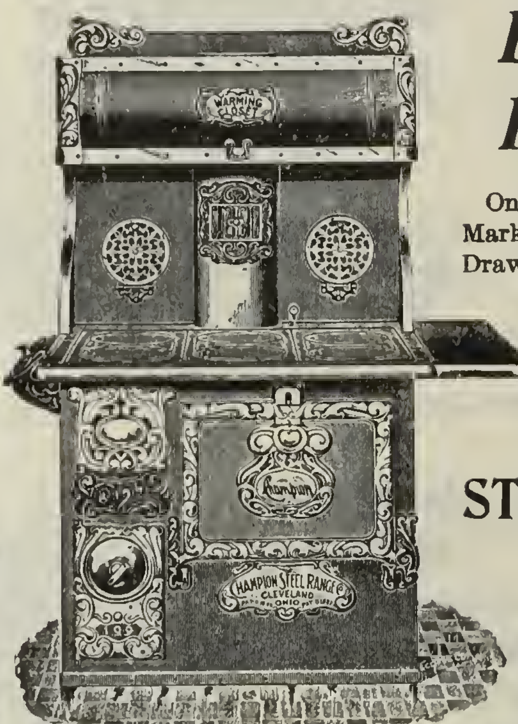
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CHAMPION STEEL RANGE Co. CLEVELAND OHIO

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A double oven, made of polished steel or tin, beautifully japanned top and front frame, drawn steel bottom rim, superior to the breakable cast-iron rims. All-wire oven racks. Adapted for cast-iron lamp stoves, tin stoves and gas hot plates. Send for price.

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Sizes: 6, 7, 8 8½, 9, 10, 10½, 11, 12, 12½, 14 and 15.

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Above All – Cheapness – a dealer cannot possibly make dampers as cheaply as we sell the Yankee. Easily put in and taken out of pipes Stiffest, quickest-working and neatest damper on the market.

It is impossible for this rod, when in position, to move either way.

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FOR STEAM OR HOT WATER.

It is Practical in Design.
It is Safe, Being Tested to 200 Pounds.
It is Easy to Manage and Keep Clean.
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It is Sectional and Easily Handled.
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There is nothing equal to it for repairing fire brick in stoves, furnaces, etc. Let us send you sample and prices.

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The Standard Adjustable Stove Truck.

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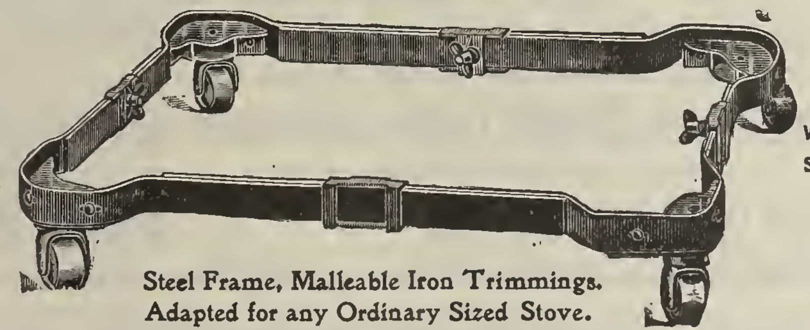
Fully Warranted.



Well Made, Strong and Durable.

Steel Frame, Malleable Iron Trimmings.
Adapted for any Ordinary Sized Stove.

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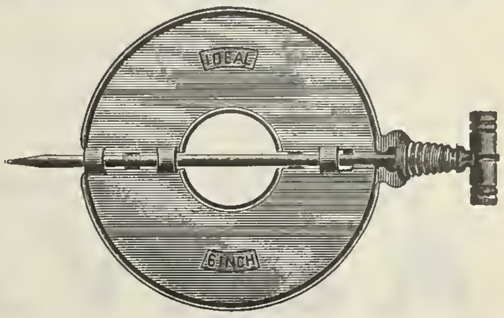

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HAVE NON-HEATING HANDLES OF ELEGANT DESIGN AND FINISH.
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Do you want Stoves and Heaters that are easily sold and *STAY SOLD?* We have been very successful in designing patterns for such.

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Specially Prepared for the Stove Trade.

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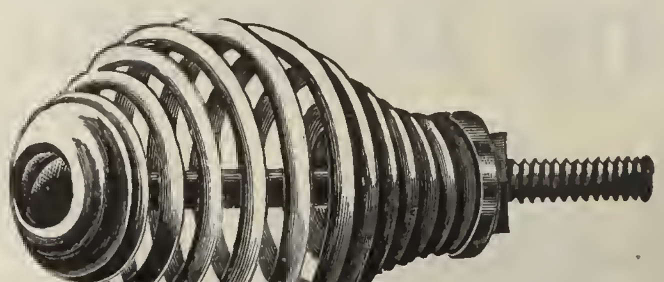

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If not, kindly send us your order at once and it will have our prompt attention. Your stove repair stock is not complete without it.

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Perfectly round and true to size. With long ends, DOUBLE LOCK SEAM in throat or under side of Elbow.

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FOR STOVES AND HEATERS.

First-class in wood and iron.

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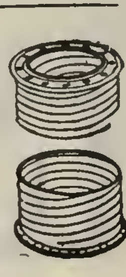

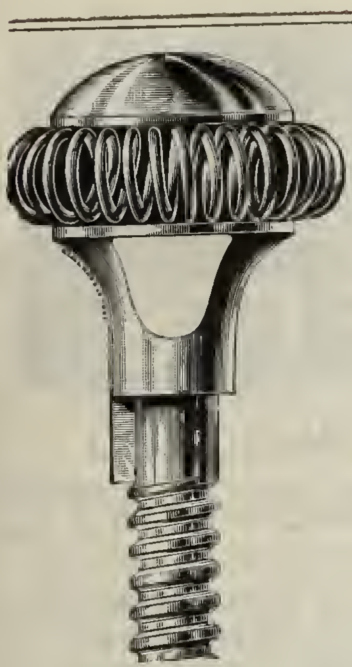

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IRON ENAMEL
A BRILLIANT JET BLACK ENAMEL THAT NEVER WEARS OFF
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WE MAKE IT!

The BEST Air Drying
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PRICE $1.50 PER DOZEN.

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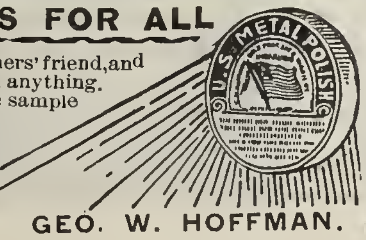

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Is the only brand made of crucible materials, viz.: Imported German Fire Clay and Plumbago from Ceylon.

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BRIDGEPORT, CONN.

Dealers are invited to send for circulars.

Packed in neat, attractive, round pasteboard boxes of three sizes: large, medium and small, holding about 10 lbs., 6 lbs. and 2½ lbs., respectively.

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SUPPLIES & POLISHING MATERIALS.

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CUPOLA LININGS
For Iron and Brass Foundries.

WILLIAMS STOVE LINING CO.,
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VACUUM APPLIANCES attached to all Heating Apparatus would

SAVE FUEL

to the value of the national debt each year. . . . .

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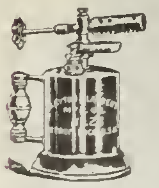

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Jobbers sell at factory price, or we will ship by paid express upon receipt of $3.00.

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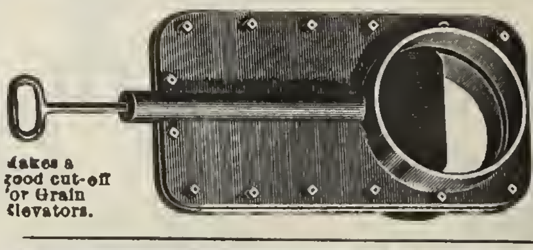

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ALL SIZES OF
Galvanized range boilers, expansion tanks and boilers with copper tube coils inside for heating water by steam.

L. O. KOVEN & BROTHER.
Office 50 Cliff St., New York City.

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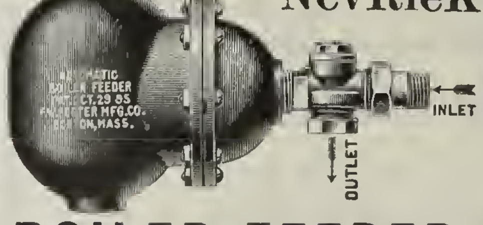
NevRleK



BOILER FEEDER.
Our Booklet tells all about it.
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JOHN H. LAWLESS,
Plumbers' Force Pumps,
184-186 Third St., Jersey City, N. J.
WRITE FOR CATALOGUE.

GALVANIZED STEEL and WOOD TANKS.
All sizes and shapes.
J. H. EDWARDS,
59 Park Place, N. Y.

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BRASS
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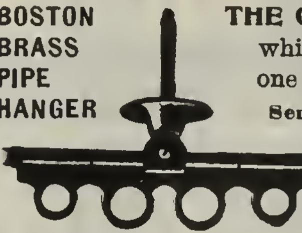

THE ONLY ONE which requires but one form of holder
Send for Circular.
JOSEPH H. YOUNG.
Boston, Mass.

COLWELL LEAD CO.,
63 Centre Street, New York.
Manufacturers of
LEAD PIPE, SHEET LEAD, SHOT,
And Sellers of
Everything You Want for Plumbing.

— ANTIQUATED.—" More new gowns ! " he cried.

" Why, yes," she answered, sweetly. " All of mine are last century styles."—*Philadelphia North American.*

— HIS STATUS.—He : " Look here, my dear. I cannot afford to entertain on such a scale as you have indulged in of late."

She : " John, I really believe you are just the kind of a man who would be perfectly happy if you lived within your income."—*Exchange.*

ABOUT ESTIMATE BOOKS

For Plumbers and Heating Men

Your Contract and Estimate Record Book for Plumbers is one of the best books that ever came into our house and we would not be without it for three times the amount it cost. We can figure without omitting anything with accuracy at a very short time. We think that every plumber should not be without this valuable book.
W. C. BENNETT & CO., Haverhill, Mass.

We have used an estimate book for three years and could not do without one. Would say that yours is far superior to any yet used and can cheerfully recommend it.
W. R. PARK & SON, Taunton, Mass.

A great advantage. Prevents the leaving out of small items, which amount to more than the cost of the book in a very short time.
CHAS. W. COOMBS, Lawrence, Mass.

Your Contract and Estimate Record Book has been of great use to me in both the saving of money and labor, and I would highly recommend it to any or all master plumbers.
THOMAS P. DOHERTY, Taunton, Mass.

These testimonials are a few of many, and indicate both that a well arranged estimate book, which provides complete lists of items to be figured upon, is a time, labor and money saver, and that the "*CONTRACT AND ESTIMATE RECORD BOOKS*" come up to this requirement.

THE EDITIONS ARE AS FOLLOWS:

CONTRACT AND ESTIMATE RECORD BOOK FOR PLUMBERS

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200 Pages. Arranged for 100 Estimates. Size 8 x 11 inches. Cloth bound, $1.50

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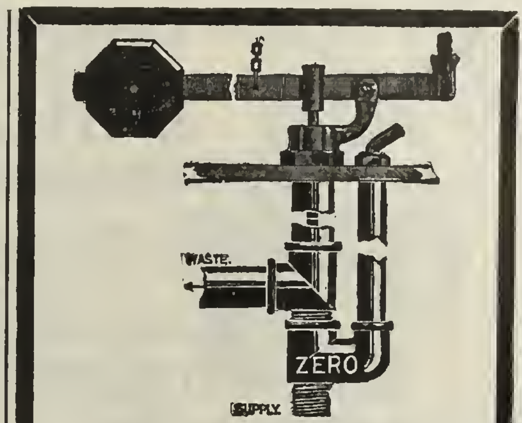
200 Pages. Arranged for 100 Estimates. 7 x 12 inches. Cloth bound, $1.50

NOTE. The omission of one item in an estimate on a plumbing or heating job might result in the loss of all profit. These books provide a reliable, accurate, businesslike record, and a sure means of avoiding loss due to mistakes and omissions.

Sent prepaid on receipt of price.

DAVID WILLIAMS CO.
PUBLISHERS
232-238 William Street, N. Y.



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The expense of installing closets by getting

Zero Anti-Freezing Valves.

They can be put in with half the time and half the labor because they do not require a pit or vault.
They are simple and durable in construction—made without screws, springs or pins.

Zero Valve & Brass Mfg. Co.,
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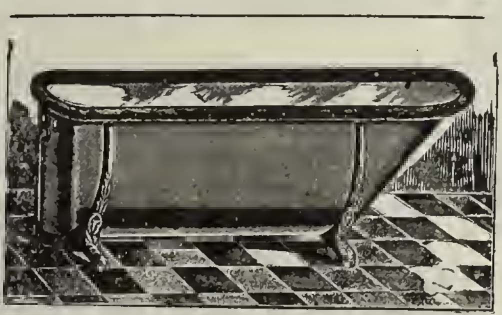

Day Metallic Manufacturing Co.,
DETROIT, MICHIGAN,
Manufacturers of
Steel Enamel and Steel Clad
BATH TUBS and HEATERS.

L. WOLFF Manufacturing Company,
General Office,
93 W. Lake Street, CHICAGO.

OLFF'S IMPROVED PLUMBERS' FURNACE
The "DURO."

THE "DURO" "F" 1241.
RICES UPON APPLICATION.
uantity shipments are packed in cases 6 and 12 furnaces each.

he "DURO" Plumbers' Furnace
Has Drawn Steel Reservoir
Heavily Galvanized.
awn Steel Coil Cup.
rought Steel Bottom.
Patent Wire Handle.
Improved Filling Plug.
Safety Air Cock Joints.
No Cast-Iron Parts.

weighs less than any other Furnace now in use.

In placing on the market
Our Improved Plumbers' Furnace
e have fully succeeded in producing ***the est furnace made.*** Most perfect in ery detail. Of the highest efficiency. operation, positive and reliable. Of bstantial construction; combining lightess, strength and durability, at no more st to the trade than the old style.
All component parts are interchangeble being accurately made and fitted bere shipment.

Illustrated Catalogue and Price-List sent upon application.

LEATHER and RUBBER WASHERS,
Machine cut, at less price than can be cut by hand. Send Sample for prices.
I. G. MARSTON & CO.,
200 Ruggles St., Boston, Mass.

Practical Gas Fitting.

Two illustrated articles describing How to Run Mains, Lay Pipes, and Put up Gas Fixtures.

116 Pages, 54 Illustrations, 5¾ x 8 inches, Cloth, Price, $1.00.

This is a concise and practical manual on the ***best methods of doing gas fitting.***

It fills a need experienced by American mechanics for a hand book giving ***plain and simple instructions*** in this important department of plumbers' work.

The book consists of two accounts, both by expert gas fitters.

Each account is complete in itself, and as they treat the subject quite differently the book will be found more particularly valuable and complete.

The numerous illustrations help to show how many things are done which are difficult to describe in words alone.

This manual is, in short, well adapted to the practical requirements of plumbers and gas fitters.

TABLE OF CONTENTS.

FIRST ARTICLE.

Introductory,
The Distillation or Manufacture of Coal Gas,
The Distribution of Gas from the Gas Holder Through the Town,
Connecting the Meter in Buildings,
Inspection of Material and Work,
Laying Out Pipe,
Gas Fitters' Tools,
Piping the Building,
Measuring Pipes,
Cutting the Pipe,
Finding Leaks,
Putting Up Fixtures,
Gas Logs,
Economical Gas Burning,

SECOND ARTICLE

Introductory,
Locating the Lights,
Locating the Meter,
Making the Plan,
Getting Out the Pipe,
Piping the House,
Gas Fixtures and Fittings,
Piping Old Houses,
Frozen Gas Pipes.

SENT, POSTPAID, ON RECEIPT OF PRICE, BY

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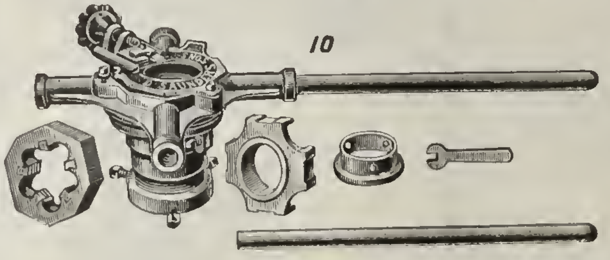
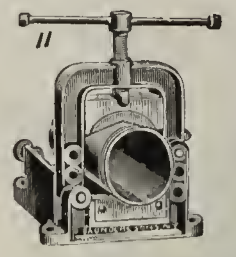
232-238 William St., New York.

D. SAUNDERS' SONS,

Manufacturers of





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FOR **LARGE PIPE.** These stocks have ***CUTTING OFF ATTACHMENT,*** and both Vises and Stocks are Malleable Iron. Light, strong and of superior design and finish; also ***PIPE THREADING MACHINES*** ¼" to 18", Tapping Machines, &c.

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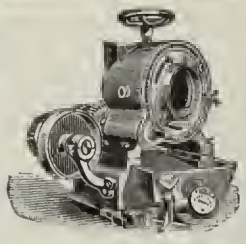
FORBES PATENT DIE STOCK

FOR HAND OR POWER.

Occupy less floor space, require less power to run, more simple of construction, far cheaper than any other machine of same range.



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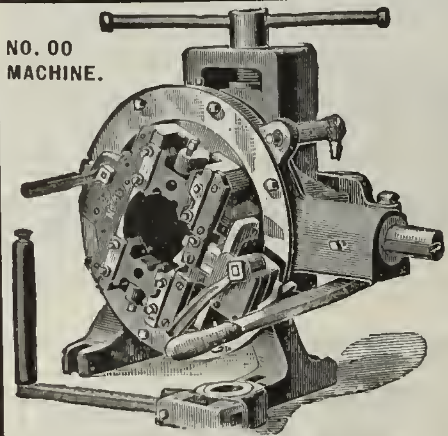
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NO DUST OR CHIPS

Can interfere with the work of

Armstrong's Pipe... Threading Machines

(HAND OR POWER).

Moving parts run in oil in covered chambers. For other strong points, see catalogue.

ADJUSTABLE STOCKS AND DIES.

THE ARMSTRONG MFG. CO.,

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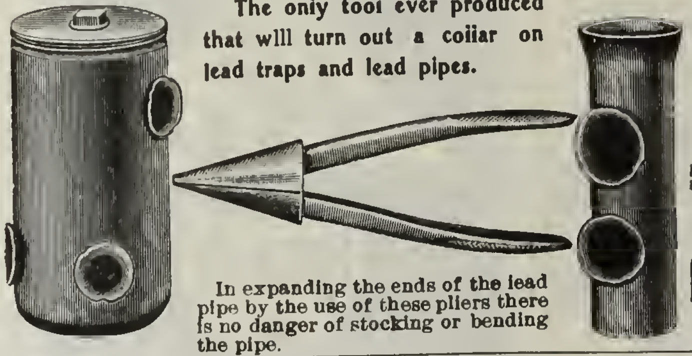
The Anderson PATENTED. **Lead Pipe Expanding Pliers.**

The only tool ever produced that will turn out a collar on lead traps and lead pipes.



In expanding the ends of the lead pipe by the use of these pliers there is no danger of stocking or bending the pipe.

"PLUMBER'S BEST FRIEND."

PRICE $1.25.

Send for Discount.

Sample pair sent by mail to any point in the U. S., postage paid, on receipt of price.

Manufactured by

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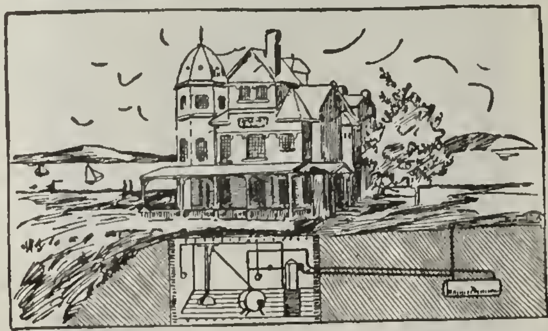
Anderson Coupling Co.

PORTLAND, CONN.

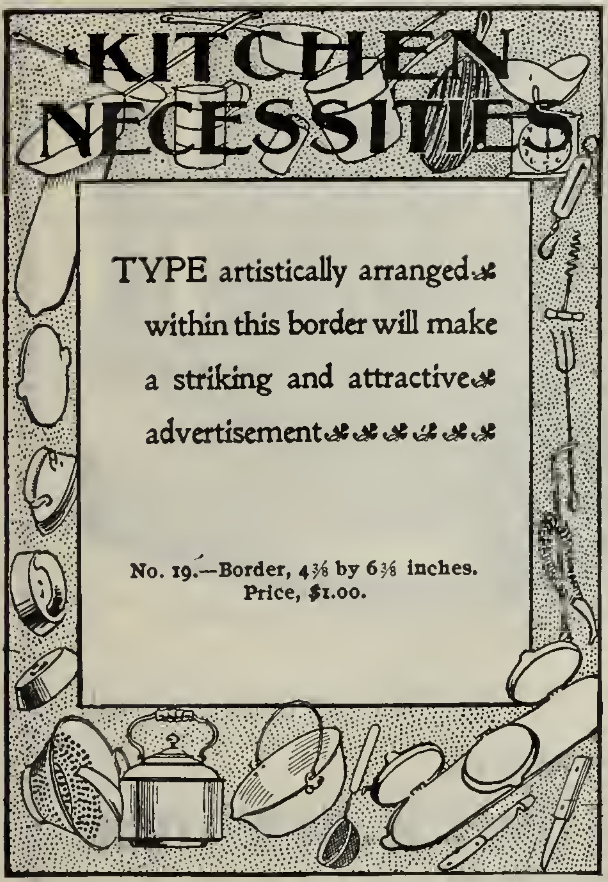


Our remarkable recent inventions enable us to offer the public an intensely brilliant, smokeless gas at much less cost than city gas, better, safer, and cheaper than electricity, and costing but one-fourth as much as acetylene. Most durable and least expensive apparatus to maintain in effective perpetual operation. Gives services of lighting, cooking, and heating, and operating pumping engines. Fullest satisfaction guaranteed, and easy terms. The very apparatus for suburban homes, institutions, etc. We construct special apparatus also for fuel gas for manufacturing, producing gas equivalent to city gas at 50 cents per 1,000 cubic feet, and made to respond to very large demands; also for lighting towns, etc. Cooking by gas rescues a person from the intolerable heat experienced with other stoves. *Send for Catalogue.*

C. M. KEMP MFG. CO., 1500 Guilford Ave., BALTIMORE, MD.

ADVERTISING CUTS

The cuts illustrated on this page will be useful to Furnacemen, Plumbers, Stove Dealers and House Furnishers, for newspaper or circular advertising, letter heads &c. ***The cuts are shown reduced to 3-5 actual size.***



TYPE artistically arranged within this border will make a striking and attractive advertisement

No. 19.—Border, 4⅜ by 6⅜ inches. Price, $1.00.

No. 33.—Price, 50 cents.

No. 36.—Price, 50 cents.

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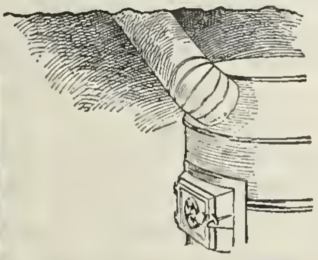
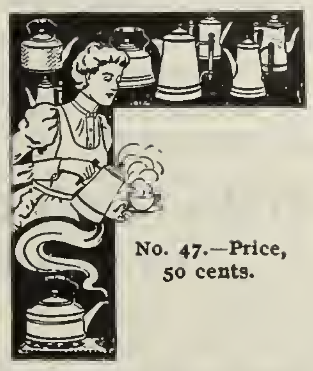

No. 42.—Price, 75 cents.

No. 46.—Price, 50 cents.


No. 47.—Price, 50 cents.

No. 61.—Price, 50 cents.

No. 15.—Price, 50 cents.

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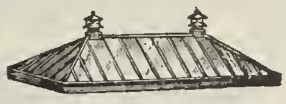
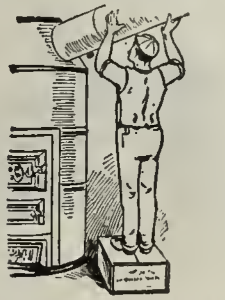

No. 78.—Price, 25 cents.


No. 41.—Price, 50 cents.

No. 83.—Price, 40 cents.

No. 20.—Price. 50 cents.

No. 30.—Price, 50 cents.

No. 45.—Price, 50 cents.

No. 84.—Price, 50 cents.

No. 81.—Price, 40 cents.

No. 29.—Price, 50 cents.

No. 32.—Price, 50 cents.

No. 44.—Price, 40 cents.

No. 75.—Price, 75 cents.

The Advertising Cuts illustrated above are reproduced 3-5 of the actual sizes.

Cuts Nos 81 and 83 are also sold in larger sizes—viz , No. 81, 4½ in. wide and 3 in. deep, price 75 cents, and No. 83, 4 in. wide and 2½ in. deep, price 75 cents. We have numerous other cuts for advertising hardware, kitchen and household articles, cutlery, mechanics' tools, &c. These include cuts of various unique designs, together with a line of 128 cuts each giving a small, accurate illustration of a salable article.

A 16-Page illustrated circular and price-list of advertising cuts will be mailed on application.

Sent prepaid by DAVID WILLIAMS COMPANY, 232-238 William Street, N. Y.

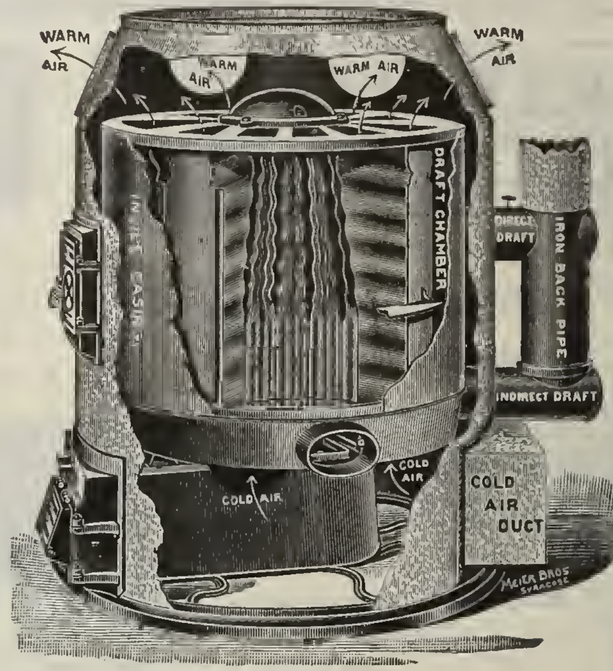
The Kelsey Warm Air Generator.

THE PRINCIPLE

Of the Kelsey is to warm great volumes of air by bringing it into **actual contact** with an **extensive** and **properly heated** surface.

This is accomplished by sending the air in **separate channels through** the long hollow corrugated cast iron sections which form the fire chamber.

This is a far more effective method, and the air is more thoroughly and evenly heated, than by simply **passing over** or **next to** a hot surface.



Sectional View.

Each section has eight square feet of heating surface, and weighs about seventy pounds. There are from nine to seventeen sections in each generator, according to its size. This means a powerful and economical heater, and an abundance of pure warm air. Each section is an independent heat generator, and by capping over one or more, and extending a heat-conducting pipe therefrom, the warm air is forced through long or level pipes to the rooms so connected.

Ask for booklets "**KELSEY HEATING**" and "**OPINIONS.**"

KELSEY HEATING COMPANY, SYRACUSE, NEW YORK.

NEW YORK OFFICE, 239 WATER STREET.

COOK & VAN EVERA CO.,
38-40 Lake St., Chicago, Ill.

"THERE'S ONLY ONE WARM AIR GENERATOR, THE KELSEY, AND IT IS PATENTED."

SPRING IS HERE

Soon the Water Cooler will be called into service.

Why not buy a new, clean one—to make, the sparkling water, doubly inviting and refreshing.

We can furnish all kinds and sizes on a moments notice.

Large stocks at all our branches.

Do not forget us on this and the thousand of other items illustrated in our catalogue. If you have no copy write any of our branch offices.

National Enameling & Stamping Co.,
NEW YORK. CHICAGO. ST LOUIS.
MILWAUKEE. BALTIMORE.

THE METAL WORKER

NEW YORK AND CHICAGO.

New York, April 12, 1902.

DAVID WILLIAMS COMPANY, - - - PUBLISHERS.

BUSINESS OFFICES:

NEW YORK..........232-238 William Street.
PHILADELPHIA..........117-119 South Fourth Street.
BOSTON..........38 Mason Building.
PITTSBURGH..........Room 1201 Park Building.
CHICAGO..........1205 Fisher Building.
CINCINNATI..........Rooms 22-24 Pickering Building.
ST. LOUIS..........1205 Chemical Building.
CLEVELAND..........312 The Cuyahoga.
LONDON..........Hastings House, Norfolk St., Strand,

Volume LVII..........No. 15
Index to Reading Matter..........Page 56

Increased Pig Iron Production.

Notwithstanding that quite a number of active blast furnaces were forced to blow out for repairs last month the pig iron productive capacity on April 1 showed a marked increase over that of March 1. According to the monthly statistics of *The Iron Age*, the total weekly capacity of the active blast furnaces on the first of this month was 377,424 tons, as compared with 328,028 tons on March 1, 1902. This is by far the largest capacity on record. From the present rate of progress it would seem that the country may after a while reach a monthly average of fully 1,500,000 tons. Meanwhile, stocks have dwindled until they are now insignificant. The total of furnace stocks, sold and unsold, on April 1 was only 94,263 tons, or less than two days' production. A notable feature of the week in the pig iron market was the closing of a contract between the United States Steel Corporation and the Bessemer Furnace Association for the delivery of 200,000 tons of standard Bessemer pig iron during the fourth quarter of the current year and the first quarter of 1903. This sale pretty well cleans up the surplus iron of this character, and is taken as a strong indication that the market will not be any lower this year, but, on the contrary, may be a good deal higher. At the present moment there is practically a famine in pig iron, and it looks very much as though importations of iron will have to be made to meet the demand. A good deal of iron is still needed by some of the large consumers for the second and third quarters of the year, and it is quite a question where they will be able to get a supply. The price at which the purchase of iron by the Steel Corporation was made is regarded as very conservative, and is calculated to have a good effect on the general market. It is said to be the earnest desire of the Steel Corporation officials, and the Bessemer Furnace Association as well, to prevent a boom in the market with the inevitable reaction in prices which always follows. Meanwhile, iron of all kinds for prompt delivery is commanding very high prices, and considerably higher figures for near future deliveries have also been established. The iron market as a whole presents an appearance of great strength and firmness, with every indication of its continuance through the entire year.

Labor Agreements.

From various parts of the country come reports that building operations are being delayed through the adjustment of the wage questions which usually come up about this time. Evidently the negotiations, instead of being carried on about the first day of May, as heretofore, have been opened earlier this year. The delay in arriving at an agreement between employers and workmen at different places not only depends on the character of the demand, but also on the business conditions. Too often those making the demand have seemed to hold the opinion that it was only necessary for their employers to increase their charges to dispose of the question without inconvenience. Unfortunately, however, there is a limit to the price which the general public are willing to pay, and, although it is by no means clearly defined where this limit is approached, it has the effect of stopping business or delaying enterprises until conditions are considered more satisfactory. A proposed agreement, presented by some of the journeymen plumbers, provides that none but members of their union shall be employed by the master plumbers. In another instance the demand is made that the number of apprentices shall be reduced, while some agreements provide for the employment of men at a rate of wage 50 cents less than the union scale, provided there is always in the shop one workman receiving union wages. Beyond these stipulations the agreements contain provisions to which little exception is taken by the master plumbers, reduction of hours and increased pay for overtime and holidays being regarded as in keeping with the times. In the main, it is safe to leave the adjustment of the questions raised, without comment, to the parties interested, even though some time may be lost by the men and some disadvanage be suffered by their employers. The one all-important question, however, that both sides must consider before some of the demands can be granted is whether or not those who have work to do will consider that they can afford to pay more for having it done. This question should be well weighed wherever controversies on the wage question are now being carried on.

Fires in Tall Buildings

A recent fire in one of the tall office buildings in Chicago developed a feature which is worthy of consideration on the part of fire department officials in the larger cities. Although in the case referred to not much damage was done it was noticed that the flames went up the elevator shafts with extraordinary rapidity, considering that in this particular building there was nothing for them on which to feed. When an investigation was made it was found that the steam pipes, instead of being covered with asbestos, as the law demands, had been covered with some inflammable material. There had been one thin layer of asbestos paper, then a thick layer of felt and finally a canvas covering. When a match was put to the felt it burned like tinder. This discovery explained at once several mysteriously rapid fires in "fire proof" buildings, and a thorough investigation of pipe coverings all over the city is to be made. Possibly it would not be a bad plan to have a similar investigation made in New York and other large cities where lofty "fire proof" buildings exist.

An Interesting Test of Public Sentiment.

Municipal ownership of public utilities is a knotty problem. Few cities of any size can be found in which it is not being attempted to a limited extent. Usually the city goes no further than to control the supply and distribution of water. Occasionally the matter of furnishing gas or electric light is taken in hand. But so far as this side of the Atlantic is concerned, no attempt has been made to invade so large a field of operations as the ownership of street railway lines would involve. It has been the almost universal opinion of business men that the opportunities for political manipulation and the temptations for official corruption would be so great as to completely overbalance any benefit which the public might derive from the municipal ownership of intramural transportation systems. Other considerations also influence those who oppose municipal ownership of public utilities, not the least of which is the very great probability that improvements would not be so quickly made in methods as under private management. It is an open question whether any service rendered by a municipality could not be better done and at less cost to the taxpayer by those who would make it their special business for pecuniary profit. But very forcible arguments are presented on the other side of the question, which have great weight in creating and sustaining an aggressive sentiment in favor of the ownership of all public utilities by cities, and from time to time those who hold this view are able to exert a sufficiently strong influence to make the question one of absorbing local importance. It seldom happens, however, that the citizens of so large a city as Chicago are given the opportunity to test the sentiment of all the voters on this subject. The election held there on Tuesday of last week is consequently of decided interest.

For some years the city authorities have been at loggerheads with the corporations owning the street railways and gas plants. The opportunity has been seized by economic reformers to institute a propaganda in favor of municipal ownership. Through their efforts the voters were enabled to express their opinions on this subject on the official ballot. The count of the ballots showed that an overwhelming number of the voters are in favor of the city owning the street railways and the gas plants. This vote is not mandatory and does not mean that the city will at once proceed to take the necessary steps to secure possession of the properties of the corporations. Obstacles, financial and statutory, are in the way which cannot be overcome for a long time, and perhaps may never be. It shows, however, that if such action should be undertaken by the city authorities they would have the support of the great body of the people. The agitators in favor of municipal ownership may be relied upon to press forward from the point of vantage which they have gained and to be unremitting in their efforts to accomplish the object sought. Other cities will be deeply interested in the outcome.

Free Iced Water.

One of the most practical and valuable agencies for alleviating the condition of the poor in the crowded districts of the city is the system of free iced water fountains maintained in New York during the summer months by the Episcopal Church Temperance Society. Up to the present the society has established about a score of such fountains on Manhattan Island, and the gratifying announcement is made that their number will be materially increased this year, especially in the tenement house districts and along the river fronts where crowds of men are constantly at work at the wharves and warehouses. These beneficent institutions meet a need that exists in all our large cities, where the heat of summer often brings intense suffering to the poorer part of the community. What is being done in this direction in New York may readily be undertaken elsewhere, for the establishment and maintenance of such fountains is not a very formidable or costly undertaking. The plan followed by the Church Temperance Society is to keep coils of pipe filled with water from the city supply and cooled by being placed in a chest which is daily filled with ice. The cost of installing such a fountain is said to be about $125, while the ice is supplied from May to October at a cost of about $100 for each fountain. The fountains are usually placed directly alongside of the sidewalk and fixed in the wall of some permanent structure, such as a school, a factory or a church. Those who have passed by one of these drinking places on a hot summer day will need no further proof of the appreciation in which they are held. Usually a long waiting line is to be seen at each fountain. Since New York City harbors a tenement house population of some two million souls, for whom only about twenty iced water fountains are at present provided, it will be seen that there is room for a material extension of the system. Few causes more worthy of support present themselves to the public spirited citizen than this matter of free drinking fountains. Apart from its value in the relief of distress the free iced water fountain must appeal, too, to the temperance advocate as one of the most practical of anti-saloon agencies.

Combinations Aid Wage Earners.

State Labor Commissioner O'Donnell of Minnesota has just published a statement of the results of an inquiry on the subject of industrial combinations sent out by him some weeks ago to individual wage earners throughout the State, which is of considerable interest. From the replies received it appears that a considerable majority of the wage earners are of the opinion that combinations of capital and consolidations of industries are a benefit to wage earners. Among the reasons advanced for this belief is the statement that combinations of capital result in the establishment of extensive industrial plants, enlarging the market for labor and making it easier to get employment. Moreover, the position is taken that the consolidations of capital have invariably resulted in the organization of employees into strong unions. Thus the consolidation of capital, while reducing competition among producers, has effected a reduction of competition among laborers. The strong labor organizations are enabled to treat with the strong industrial combinations more effectively and are able to arrange schedules of wages and have them accepted without recourse to strikes, the workmen practically fixing their own wages, whenever their demands are reasonable. The labor unions also find it much easier to deal with one large corporation than with a number of competing manufacturers.

The catalogue issued by the Thomas S. Clarkson Memorial School of Technology, Potsdam, N. Y., includes in its announcements for 1902 and 1903 an outline of the course of mechanical engineering, which includes, among its subjects, heating and ventilation, steam and refrigeration and the construction of the various types of steam boilers. Courses are also given in chemistry, civil engineering, drawing and design, engineering, economics, electrical engineering, home science, hygiene, mathematics, mechanics, physics, physiology and shop work. The shop work includes wood turning, pattern making, forging, foundry work, bench iron work and machine tool work.

THE NATIONAL ASSOCIATION OF STOVE MANUFACTURERS.

Secretary Thomas J. Hogan has issued, under date of April 3, the following announcement relative to the approaching convention of the stove manufacturers:

To the Stove Manufacturers of the United States:

The thirty-first annual convention of the National Association of Stove Manufacturers will be held at the Waldorf-Astoria, New York City, on Wednesday, May 14, 1902.

I am instructed by the president, Albert N. Parlin, to extend an invitation to every stove manufacturer, whether a member or not of the association, to attend this meeting and take part in all the proceedings, except in voting.

Topics of interest to the entire stove fraternity will be discussed, and every effort is being put forth by the executive officers to make this meeting interesting, instructive and profitable to all who may attend. You are therefore cordially urged to set aside your business care for a few days and meet with your brother manufacturers and discuss with them the ways and means that will best serve to advance the interests of the stove industry. The advantages of gatherings of this kind are significant to the small even more than to the large houses, and no equal expenditure of time and money can reasoably yield as large returns as participation at gatherings of, and informal intercourse with, gentlemen engaged in the same line of business. All who come may rely upon the sincerest welcome from the members of the N. A. S. M.

Nonmembers will be entitled to all the privileges of reduced rates for transportation and special hotel rates, same as members of the association.

Representatives who are not members of firms or officers of corporations should produce credentials from their principals addressed to the secretary of the association.

Transportation.—Reduced rates, amounting to a fare and one-third for the round trip, have been conceded by the Trunk Line Association, the Central Passenger Association, the Southern Association and the New England Passenger Association from points in their territory, upon the condition that at least 100 persons having certificates attend the meeting. Certificates should be obtained from the agent of whom the tickets are bought, and if the starting point is outside of the territory where certificates are issued a short trip ticket to the nearest point in that territory should be secured and a ticket to destination be bought from that point. Certificates should be signed by the agent of whom the tickets are purchased, and they must be signed at the meeting by the secretary and vised by the special agent who will be present for that purpose, in order to secure the rebate on the return trip. In starting full fare must be paid, and the return trip will be made one-third fare upon presentation of the certificate properly vised.

Hotel Accommodations.—The Waldorf-Astoria is conducted on the European plan entirely.

Single rooms, without bath, range from $3 per day and upward.

Double rooms, without bath, accommodating two people, are from $5 upward.

Single rooms, with bath, $4 per day and upward.

Double rooms, with bath, $6 per day and upward.

There are a number of hotels in the vicinity at which accommodations can be had at cheaper rates if desired.

It is important and necessary, if you wish to be properly cared for, that you notify the hotel proprietors a little ahead of time to reserve for you such accommodations as you require, and state whether you desire a room with or without bath, and about what price.

STOVE FOUNDERS' NATIONAL DEFENSE ASSOCIATION.

The following announcement relative to the seventeenth annual meeting of the Stove Founders' National Defense Association has been issued from the office of the secretary, Thomas J. Hogan:

The seventeenth annual meeting of the Stove Founders' National Defense Association will be held at the Waldorf-Astoria, New York City, on Tuesday, May 13. The proceedings will commence promptly at 10.30 a.m. Your attention is called to the fact that the meeting of this association is held one day prior to the meeting of the National Association of Stove Manufacturers. President Castle urges the attendance of every member at this meeting, as matters of special importance will be considered and acted upon. Kindly advise me of your intention to be present.

THE WESTERN ASSOCIATION OF STOVE MANUFACTURERS.

The annual meeting of the Western Association of Stove Manufacturers was held in Chicago on Tuesday. After discussing the various conditions which tend to increase the cost of the production of stoves, a resolution was adopted making a 5 per cent. advance in the price of all oast iron stoves and ranges, except the highest grade base burners, to go into effect immediately. This makes a total advance of 10 per cent. on cast iron goods this year. No change was made in the price of steel ranges, as they had already been advanced 10 per cent. It is expected that stove manufacturers in other sections will follow the example thus set by the Western Association of Stove Manufacturers.

This meeting being the annual one, the following officers were elected for the ensuing year:

President, Dr. W. G. Henry, Detroit Stove Works, Chicago.

Vice-President, D. McAfee, Thomas White Stove Works, Quincy.

Treasurer, Louis Moore, Joliet Stove Works, Joliet.

Secretary, Thomas J. Hogan, Chicago.

STOVE MARKET FIRMER.

There has been what may be considered fairly good buying on the part of the stove trade so far this year, particularly outside of the larger cities, and while there are indications of a slight falling off this month, many houses are well satisfied with the trade that is coming to them. In some sections the prices ruling through last year were withdrawn the early part of this year and there has been a general stiffening of prices. In the vicinity of New York the stiffening has not been so marked as in some other districts. A change, however, seems to have been developed recently and independent advances in various lines have been made by different houses selling in this market. Apparently stove dealers have not been unprepared for this and have raised no substantial objections to it. At the present time, as the price of iron shows great strength and the wages of stove molders have been advanced 5 per cent., there is every reason to expect that those who buy stoves will have to pay increased prices. Should there be as much difficulty in securing iron and fuel in the fall as has been met with during the spring, it would seem that some shortage may be developed in the supply of stoves and the dealer may experience trouble in having his wants supplied. If on investigation stove buyers should conclude there was a basis for such an opinion, it is probable that the stove salesmen will have less difficulty in getting orders than they have had for many previous seasons.

The New Process Gas Ranges.

The Standard Lighting Company of Cleveland, Ohio, are issuing a 48-page catalogue entitled, "How, When and What to Cook; or, Cooking Made Easy by Using Gas." The publication is issued in the interests of the New Process gas ranges, made by the company, and the recipes which it contains have been gleaned from the latest and best authorities, according to Mrs. Alice Carey Waterman, a well-known authority on culinary topics. The recipes are said to meet a crying need of the hour for plain, wholesome, palatable foods, with full instructions for the preparation of foods that nourish and meet the demands of the body, without extravagant expenditure of money, material, time or patience. After giving some instructions for the selection of a gas stove and for its use, interspersed with the text are found a variety of recipes for everything adapted for the summer bill of fare, from soup and fish to pastry and pudding. Half-tone engravings show many everyday dishes attractively arranged. One illustration shows a table set with an informal luncheon, suitable for "when a friend drops in."

The Furnace Work Record.

SUGGESTIONS FOR IMPROVEMENT.

We have received many expressions of opinion in reference to the Furnace Work Record recently presented in *The Metal Worker*, with not a few suggestions for its improvement, and are glad to note the interest taken in it. This interest has drifted in two directions—the one scientific and the other financial, but both involving mathematical calculations—as may readily be discerned from the suggestions for improvement which we take pleasure in presenting below for the benefit of those who may desire to devise some system of recording their work, with a view to avoiding loss of profit, as well as the failure of the plants they install to operate satisfactorily.

For half a century the attention of those engaged in the furnace trade has been devoted principally to its financial side, without any such general desire for a uniform specification and contract as has been discussed by the heating contractors in the steam and hot water field. There can be no question that an all-important factor in any furnace heating plant is the profit which it brings to the furnaceman, and methods to avoid loss are consequently of great importance. On the other hand, the greatest loss, not only to individual furnacemen, but to the whole furnace trade, has come from furnace work that has proved unsatisfactory in use. It is the opinion of many who have the best interests of the furnace trade at heart that most failures of furnaces to heat buildings are due to the thumb rule and guess work methods which largely prevail except where men have had opportunity to acquire experience. This want of method has not only been the cause of financial loss to the whole furnace trade, but has also prevented furnace heating from rising to its proper place in the estimation of the public.

Men who seek to advance furnace heating are strongly of the opinion that if furnacemen would co-operate in the collection and recording of information for the formulation of rules which would enable all to do successful work one of the greatest obstacles to the more general use of furnace heating would be removed. The opinions of such men have been presented in previous issues of *The Metal Worker*. We now give some of the suggestions that have been received for the improvement of the Record.

A Pacific Coast furnaceman, who returned the Record of Furnace Work filled out with examples from his practice, remarks:

I think these blanks are an excellent thing for people who do a large amount of house heating work, and can think of no changes to suggest, other than a column showing the total number of heat units required for the house, which I always compute for my furnace work.

A member of a heating concern in Massachusetts says:

We are keeping a record of one of our jobs, which we will send to you in a few weeks. In the meantime we would make a few suggestions in regard to the Record of Furnace Work. It should give:

- The location of the building as to the points of the compass.
- The number of hot air pipes to the first, second and third floors.
- The size of vertical stacks, and the size of the cellar pipes to the stacks.
- The size of ventilating pipes from the different rooms and their area.
- The size and area of both heating and ventilating registers.

A Western furnaceman suggests that the Record should include:

- The coal burned during a week.
- Whether the windows are single or double glazed.
- The number and size of wall stacks.
- Temperature at registers on different floors.
- Temperature usually maintained in rooms.
- Exposure of building as regards points of compass.
- Depth of the cellar.
- Average pitch of hot air pipes.
- Points of compass from which cold air is taken.

A New Hampshire man expresses the desire to keep the blank, but says that he will fill in a duplicate if furnished to him. He suggests seven more columns to be added to the Record, as follows:

- Estimated cost of registers.
- Estimated cost of pipes, dampers, &c.
- Estimated cost of heater.
- Estimated cost of labor.
- Estimated cost of incidentals.
- Prices submitted to customer.
- Actual cost completed.

An Iowa furnace contractor writes:

I give here a little idea of what I think should be used in connection with *The Metal Worker* Record of Furnace Work. I would either make a chart large enough to add these items, or make a separate chart to include them. It will be seen that I carry out the cost of everything, which, when referred to, will give the exact cost of the job complete. Then when the Record is filed away for reference it is very easy to learn just what was used and what it cost. In case it is necessary to make a rough estimate of another job in a short time it will be found of great assistance, for one of the Records can be referred to which may cover a building very similar to that which you are called upon to estimate. When a customer asks what a job will cost and wants an estimate, ask him about the size of the house, so as to form an idea of the size of the furnace that should be used. Then find the cost of the furnace and multiply it by 25 and point off three decimals from the left. This will give the price very near what the job will cost, if you were to figure each item out separately and add your profits, as will be shown by an examination of the list given below. In this instance the furnace cost $93.64, which, multiplied by 25 and the decimal point placed, gives $233.10.

Building heated	Name of owner.
Wall surface	3060 square feet.
Glass surface	420 square feet.
Type of furnace	No. 44, steel.
Capacity	22,000 cubic feet.
Cost of furnace	$93.64
Size of hot air pipes	1-8, 1-9, 4-10, 2-16 and 2-12
Area of pipes	940 square inches.
Cost of pipes and fixtures	$38.46
Size of cold air duct	24 x 28 inches.
Cost	$10.00
Proportion of hot air piping to wall surface	1 square inch to 3 square feet.
Temperature at register	150 degrees.
Temperature outside	Zero.
Registers	8
Register faces	2
Cost of registers	$48.72
Cost of labor on furnace	$14.00
Cost of job complete	$204.82
Per cent. profit	$34.33
Total	$239.15

A Philadelphia furnaceman writes:

My candid opinion of the record of furnace work is that there is too much blank to get the average furnaceman to fill it out. The number and size of the windows, it seems to me, might be omitted from the sheet, as the column "glass surface" covers the point. The proportion of hot air pipe area to space heated appears to me to be of little value when averaged for the entire house. The relation between the area of these pipes and the contents of the room to which it is connected and the equivalent glass surface in the room is of importance, noting, in addition, the floor on which the room is located. It seems hardly necessary to compute the proportion of heating surface to space heated and the equivalent glass surface, since, if the ratio of heating surface to grate surface is what it should be, these proportions may be whatever they are, and the house will be heated successfully if the proper grate surface is provided. I believe the blank, when boiled down, will be productive of much good to the entire furnace trade, and should the data compiled be returned to *The Metal Worker* for presentation information of vital interest will be recorded and preserved. I believe it to be to the interest of the whole trade to aid in getting this branch of the heating business figured on a more systematic basis, as there is no reason why furnace work should not be calculated with as much certainty as steam and hot water heating.

THE BRYAN HEATER COMPANY, Hoosick Falls, N. Y., are making extensive improvements at their plant, which will give them increased producing facilities. A new two-story building, 50 x 75 feet, has been erected, which will be used for storehouse purposes, and the warehouse has been equipped with an overhead trolley for convenience in handling the company's Hot Air Furnaces.

ROTARY SYSTEMS AND FURNACE CONSTRUCTION.

BY E. W.

Feeling greatly interested in the discussion of the merits, &c., of hot air furnaces which has been going on in *The Metal Worker* within the past few months, I venture a few words in regard to the healthfulness of air warmed by hot air furnaces, and also in regard to the method of obtaining the best results.

I cannot agree fully with "Iowa" in his views presented in *The Metal Worker* of March 8 in regard to the rotary system of furnishing air for warming. If the house to be warmed by a hot air furnace has a large hall it would be well to draw air from the floor to the furnace. However, my opinion is that air warmed and conducted to rooms by the rotary system is as good, and better in a general way than air warmed over and over again by contact with radiators which are placed in rooms for heating them by either steam or hot water. I think that with either of the latter two systems the air warmed cannot be as good for respiration as air taken from out of doors and warmed by passing over the heated surface of a furnace, provided the furnace is properly constructed and proper attention is given to ventilation.

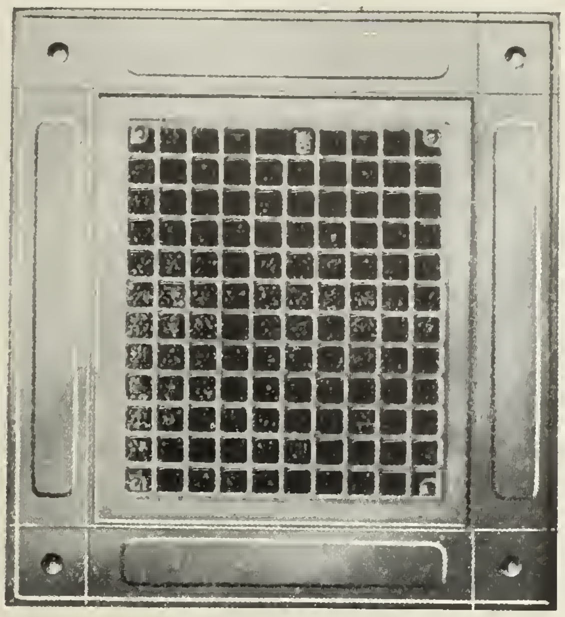
I have been engaged practically in the hot air furnace business for 52 years, and during that time have been an interested observer of the operation of many and of a great variety of furnaces. I believe that great injury has been done to furnace heating by the production of the various cheap kinds of furnaces which are sold. The sharp competition for trade has been injurious to all interested in the reputation and success of furnace heating. I am glad to learn from *The Metal Worker* that the hot air furnace is reviving and gaining favor. This is a good time for furnace manufacturers to revise and improve their productions and to so arrange them that they will be capable of warming rooms at a greater distance from the furnace. There is abundant room for improvement in the construction of the hot air furnace, which can and will be accomplished, not so as to compete with the very low priced furnace, but so as to make them much more satisfactory to the user.

The Chappell Furnace Catalogue.

The New Century catalogue devoted to the Chappell hot air furnace, manufactured by the Chappell Furnace Company of Morenci, Mich., which consists of 18 pages, shows a furnace adapted for the use of either coal or wood, arranged so that the fire chamber and combustion chamber present a large amount of surface, while the products of combustion on rising pass into a large cast iron seamless radiator, from which they pass to the chimney, or, by turning a damper, take a still longer travel to the smoke outlet. By this means not only is an economy of fuel effected, but a large heating surface is presented. The Chappell furnace is designed for brick setting and is made in several styles, one style being constructed entirely of sheet steel. The last pages of the catalogue contain some useful information for the guidance of furnacemen in setting up furnaces and in determining the size of furnaces to be used from detailed information as to the character of the building.

The H. & C. Wrought Steel Registers.

We present herewith illustrations showing the appearance and construction of the new H. & C. wrought steel hot air registers, that are being manufactured by the Hart & Cooley Company of New Britain, Conn. Among the special points to which attention is drawn by the manufacturers of these goods are that the registers are practically unbreakable, and that, while much stronger than cast iron, they average over 40 per cent. lighter in weight, making a considerable saving in freight charges. The register boxes, being of shallow depth, require much less room than others in use. In most cases the register will take the place of the convex face registers for side wall use. The border frames are provided with lugs at each corner, as shown in Fig. 1, for centering in the floors, and these lugs may be readily hammered flat if desired, thus obviating carrying in stock borders both with and without ribs. Tin box loop holes are provided in the borders in the same location in each size as in the standard makes of cast iron registers. The register boxes are also equipped with tin box loop holes for use in fastening to side walls, for which purpose a flange is provided on the boxes. The registers may also be fastened to side walls by screws through these flanges, thus preventing the necessity of marring the surfaces of the face plates with screws for holding the same. The registers and border frames are of standard size, and interchangeable with the standard makes of cast iron registers. Face plates of wrought brass are furnished at a very moderate advance over steel, making a register that will retain its finish and always present a handsome appearance. The manufacturers point out that the unique brass finish makes an especially attractive register. Register faces are finished to match standard finishes of hardware, as well as of the standard register finishes. Each register is packed in a cardboard box, making a neat package, and these are packed in cases of a convenient size for handling.



The H. & C. Wrought Steel Registers.—Fig. 1.—General View.

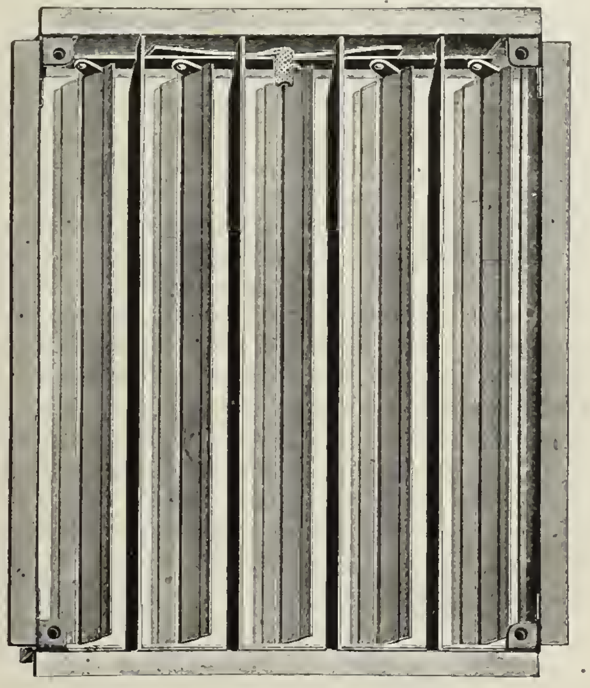


Fig. 2.—The Valves.

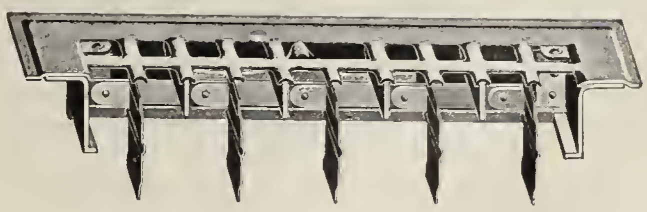


Fig. 3.—Sectional View of Face and Valves.

Uriah Hill.

The Union Stove Works of Peekskill and New York City are in one respect, at least, unique, and probably lead all competitors in the stove business, in having a president who has just celebrated the sixtieth anniversary of his wedding. The friends of Uriah Hill, Jr., will be interested to know that this event, so unusual, occurred on Thursday last. Mr. and Mrs. Hill were the recipients from their relatives, who assembled at the family residence in Peekskill, of several handsome tokens in remembrance of the happy occasion, while the company's clerks in New York conveyed their congratulations and presented to them a Tiffany vase of cut glass and sterling silver. Mr. Hill remains in the enjoyment of good health, and comes to the New York store weekly for business consultations with Mr. Acker, the treasurer, and his other colleagues, who, with all his friends, sincerely wish him many happy returns of his wedding anniversary.

ODD PLATES.

The Reading Stove Works, Reading, Pa., have recently made shipments to Australia, South America, Turkey, Holland and South Africa.

The Sun Stove Company, Detroit, Mich., have filed amended articles of association, increasing their capital stock from $40.000 to $100,000.

W. J. Carton of Utica, N. Y., died on April 3, at Colorado Springs, Col., from the result of a carriage accident. Mr. Carton was vice-president and treasurer of the Carton Furnace Company until about five years ago, when that concern were merged into the International Heater Company. Some years ago he was attacked by a spinal trouble, which permanently crippled him, since when he has spent considerable time in the West for the benefit of his health. Mr. Carton was 42 years of age at the time of his death and was never married.

The spring renovation of their quarters is well under way at the office and showrooms of the Thatcher Furnace Company, 240 Water street, New York. The entire second floor is now being provided with a handsome metal ceiling appropriately decorated, with a view to increasing the light and giving better facilities for the office force and salesmen. The walls and ceilings of the showroom on the first floor are also being refreshed, to set forth to better advantage the Thatcher line of Hot Air Furnaces, Steam and Hot Water Boilers and Ranges.

The Malleable Iron Range Company, Beaver Dam, Wis., have decided to erect larger buildings and otherwise increase the capacity of their plant.

George W. Wagoner of Floyd, Wells & Co., Royersford, Pa., who was a visitor at their New York office, 210 Water street, this week, expressed his satisfaction at the fine showing of Irving, Starling and Home Ranges that is being made by Manager R. W. Hillman. The firm recently shipped two carloads of Irving Ranges to San Francisco.

In a recent report on the outlook for American export trade with Germany United States Consul-General Frank H. Mason of Berlin says in regard to Stoves: "American anthracite has been experimentally imported to Berlin during the past winter, but has failed of its expected success because it is harder than the Welsh coal, makes more ash but less clinkers, is less inflammable, and being, therefore, harder to kindle and more liable to extinction under reduced air supply, has not worked well in Stoves and Furnaces made for British anthracite. There would seem, therefore, to be an opportunity for a limited number of Stoves adapted to the American fuel."

The Rochester Radiator Company, Rochester, N. Y., who are well known to the trade through their Rochester Radiator for utilizing the heat from smoke pipes, also manufacture a variety of Registers and other Stove Dealers' Supplies and Fittings.

Chalmers Trimble has been elected secretary of the Stanton Heater Company, Martin's Ferry, Ohio. Mr. Trimble was formerly a Government gauger at Powhattan, Va.

The Detroit *Journal*, in calling attention to the fact that the National Association of Manufacturers must choose a new president at its meeting in Indianapolis, April 15, states that it could do no better than to consider the name of George H. Barbour of Detroit for that position. Doubtless this view will be indorsed by his many friends in the Stove trade.

The Eastern Stove & Range Company, with principal office at 130 Fremont street, San Francisco, Cal., have been incorporated with a capital of $50,000 to conduct a general Stove business. They will do an exclusively wholesale business, calling on dealers in Stoves, Hardware and Metals on the Pacific Coast and the Orient. The company desire to receive catalogues, descriptive matter and quotations on goods pertaining to their lines. They have purchased the wholesale department of the Phinney Stove & Hardware Company of San Francisco.

The Weir Stove Company, Taunton, Mass., are building a new core room as an addition to their plant.

The Standard Blue Flame Oil Gas Company of Chicago were incorporated last week in Delaware, with a capital of $500,000, to manufacture Steel Heating and Cooking Stoves, &c.

The Richmond Stove Company, Norwich, Conn., are building a two-story addition, 68 x 103 feet, to their foundry and propose enlarging the Collins water wheel works, which they own, by erecting a building, 100 x 200 feet, for storage purposes.

Care of Aluminum Utensils.

Leaving out of the account the question of expense, aluminum cooking utensils probably have failed to secure the place in popular favor that they deserve, owing to the ignorance of the public in regard to their proper care and preservation. In order to overcome this difficulty the Aluminum Cooking Utensil Company of Pittsburgh, Pa., have issued a little pamphlet containing full information in regard to aluminum kitchen ware, in which the following directions are given for the proper treatment of these goods:

Aluminum is not superior to the human body, in that it must be cleaned to be kept in order. The statement is often made that aluminum does not tarnish. This is not strictly true. It tarnishes, however, much less than do the other metals with which it is commonly compared. If an aluminum utensil is set away where it is not kept clean and dry it may in time darken, and this darkening is largely due to the accumulation of dirt, &c., and to some extent also to chemical action upon the metal itself—a true tarnish. If, however, the same utensil is occasionally washed and rubbed there should never be any perceptible discoloration. The first important step, therefore, in the case of aluminum utensils is to keep them clean and dry when not in use. Wash each utensil well in hot water and plenty of soapsuds, dry with a cloth and place empty upon the hot stove for a few minutes. The object is to dry quickly and thoroughly. Ordinarily such care will be sufficient to keep the utensil in perfect order.

There are a few things which are enemies of aluminum and must never be used in cleaning it. Never boil ashes, lye or other alkalies, such as soda, potash, ammonia, &c., in an aluminum utensil. These substances attack the metal and blacken it, and water containing any of them will affect the utensils in a similar manner. Water containing sewage or other contamination will discolor an aluminum utensil. This is largely due to the presence of ammonia. Should the utensils become discolored the fault lies not with the utensil, but with the water used. It should be looked upon as a valuable indication of the condition of the water and should teach the necessity of a good filter or other means of purification. The discoloration may be prevented by using water which has been previously well boiled. This should always be tried when there is any trouble.

For cleaning aluminum utensils wash with soapsuds and hot water, rinse and dry as already described. Should anything adhere instantly pour hot water into the utensil and let it stand to cool. Should it be necessary, scour the inside with bath brick dust or Sapolio. Use any good silver polish for the outside.

CONSOLIDATION OF HARDWARE JOBBERS.

Authoritative announcement is made by *The Iron Age* of the consolidation of the great jobbing hardware interests of the country, rumors of which have been current for some time past. The consolidation embraces the Simmons Hardware Company of St. Louis, the Bindley Hardware Company of Pittsburgh, the William Bingham Company of Cleveland, the Supplee Hardware Company of Philadelphia, the Pacific Hardware & Steel Company of San Francisco, the Marshall-Wells Hardware Company of Duluth, the Bigelow & Dowse Company of Boston, the Van Camp Hardware & Iron Company of Indianapolis, the George Tritch Hardware Company of Denver, Janney, Semple, Hill & Co. of Minneapolis, and 40 other houses, representing nearly every important trade center of the country. Negotiations are still pending with other houses, and it is expected that there will be further accessions to the number already enrolled in the combination.

Several names have been suggested for the consolidation, such as the International Hardware Company, National Hardware & Metal Company, International Hardware & Metal Company, and there is little doubt that one of these will be chosen, but the precise form of the name has not yet been positively determined.

The organization not being technically completed, there has been no formal choice of officers. It is, however, purposed that the officials shall be as follows:

President, E. C. Simmons.

Vice-President, John Bindley.

Chairman of the Executive Committee, W. D. Simmons.

There will be a Board of Directors, consisting of from 25 to 30 persons, representing the different sections of the country. There will also be an Executive Committee of nine, of which the president and vice-president will be ex-officio members.

It is intended to incorporate under the laws of New Jersey with a capital of $120,000,000, $40,000,000 6 per cent. cumulative preferred and $80,000,000 common stock.

The general headquarters for buying and selling and transportation of goods will be in St. Louis. The Eastern headquarters will be in New York City, and under the charge of Mr. Bindley, who will also be chairman of the Finance Committee. The members of the Executive Committee residing in the East with Mr. Bindley will manage the Eastern business of the corporation. The Eastern office will have charge of the finances and of the auditing and insurance of the company, as well as the general direction of all the houses in Maryland, Pennsylvania, New York and New England. The general buying for the company will be from the St. Louis headquarters, where the larger contracts will be placed, but the smaller buying will be done by the local houses.

The concerns constituting the company will continue, for the present at least, without change, and so far as the public would observe business will run on as before the consolidation. The principle of home rule will be recognized in connection with the local houses, who will make their own selling prices, except so far as this may interfere with the buying department or the expressed wishes of the manufacturers, which it will be the policy of the company to respect. Each house will be held responsible for the results of their business, and if these are not satisfactory the house will be closed up.

It is intended to continue the present force of salesmen connected with the various houses, so that existing personal relations between wholesale and retail distributers will be preserved.

The company expect that their policy will meet with the hearty approval of the retail trade, to whom they look for liberal support. All retailing from wholesale houses will be stopped, except so far as they may have separate and distinct retail departments conducted on retail principles and selling at proper retail prices. The company's business will be confined almost entirely to retail hardware dealers, railroads and large manufacturers whose purchases are of such magnitude that they would not be willing to buy from retailers. They hope also that something may be done in the way of discouraging the sale of cheap goods and in preventing department stores and catalogue houses from advertising prices which do not allow a reasonable profit for the regular retail merchant. They base their expectation that they will receive a large part of the trade of the retail merchants on the excellent service they will give, especially in the line of prompt shipments and considerate and businesslike treatment and methods.

Large and complete stocks will be carried by all the different houses, so that prompt shipments will be made with a view to serving the interests of the retail trade, with whom the company regard promptness in the supply of goods as exceedingly important. Each house will give special attention to the cultivation of their own immediate territory and thus avoid the evils of attempting to cover sections which are at a disadvantageous distance. The trade are familiar with the evils connected with the practice, which has of late been prevalent in an aggravated form. The company expect to meet all legitimate competition, but intend to avoid cutthroat methods, their aim being to do business on more conservative and reasonable lines than has been possible under existing conditions.

CALIFORNIA STATE RETAIL HARDWARE ASSOCIATION.

The first annual meeting of the California State Retail Hardware Association was held in the Palace Hotel, at San Francisco, on Monday and Tuesday, March 10 and 11. The convention was presided over by the president, O. F. Sites of the Palace Hardware Company of San Francisco, and the members of the association were welcomed by Eugene Schmitz, Mayor of San Francisco.

The Central Retail Hardware Association, the San Joaquin Retail Hardware Association and the Southern Retail Hardware and Implement Association announced their desire to affiliate with the State Association and comply with the requirements of its constitution and by-laws. President Sites addressed the convention and outlined the aims and purposes of the organization, which was started in February, 1901, by the affiliation of two local associations—the Pacific Retail Hardware Association and the San Francisco and Oakland Retail Hardware Association.

Resolutions in memory of the late Frank F. Osborn, the treasurer of the association and formerly president of the San Francisco and Oakland Association, were adopted. A paper on "Sub-Organization," which was read by G. A. Gutman, was enthusiastically received and favorably commented upon.

The nominating committee reported the following nominations for officers and Executive Committee, to serve during the ensuing year:

PRESIDENT, O. F. Sites, San Francisco.
VICE-PRESIDENT, G. A. Gutman, Germantown.
SECRETARY, Henry Gracey, San Francisco.
TREASURER, H. C. Bennett, San Francisco.

EXECUTIVE COMMITTEE.

SAN JOAQUIN: C. W. Barrett, Fresno; Theo. Turner, Modesto.
CENTRAL: E. A. Eaton, Salinas; J. W. Baxter, Watsonville.
SOUTHERN: Wm. F. Lutz, Santa Anna; E. C. Dawe, Santa Barbara.
PACIFIC: John C. White, Marysville; A. L. Nichols, Chico.
SAN FRANCISCO AND OAKLAND: S. V. Armstrong, San Francisco; M. M. Brown, San Francisco.

The nominations were approved by the convention, the election being made by acclamation. The time and place for holding the next annual meeting was, by the consent of the convention, left to the discretion of the Executive Committee. On Wednesday an enjoyable entertainment was prepared for the delegates.

WISCONSIN REFRIGERATOR COMPANY, Eau Claire, Wis., have issued a catalogue of the Wisconsin Peerless and Badger Refrigerators. Referring to the former line, they state that this season they have still further increased its efficiency by the introduction of several new features, which are described. A folder is also issued relating to their Peerless Enameled line, which is said to embrace all of the best features of their Peerless, with the addition of a thoroughly white enameled provision compartment.

The Noxall, Jr., Filter.

The American Filter Company, 133-135 Michigan street, Milwaukee, Wis., are the manufacturers of the Noxall, Jr., filter, illustrated herewith. This filter is made with spun copper top and cast brass bottom, tinned on the inside, and with highly polished nickel plated exterior. The top is fitted with the company's improved rubber attachment, which is spun into the shell, making it practically indestructible and easy to slip onto any faucet. The filter is 2 x 4 inches in size, weighs 12 ounces complete, and has a filtering capacity of 10 gallons of water per hour. The filtering medium used is the natural germ proof Noxall stone, the same as is used in all the company's high grade Noxall filters. In Fig. 2 is shown a sectional view of the filter, indicating its construction and operation.

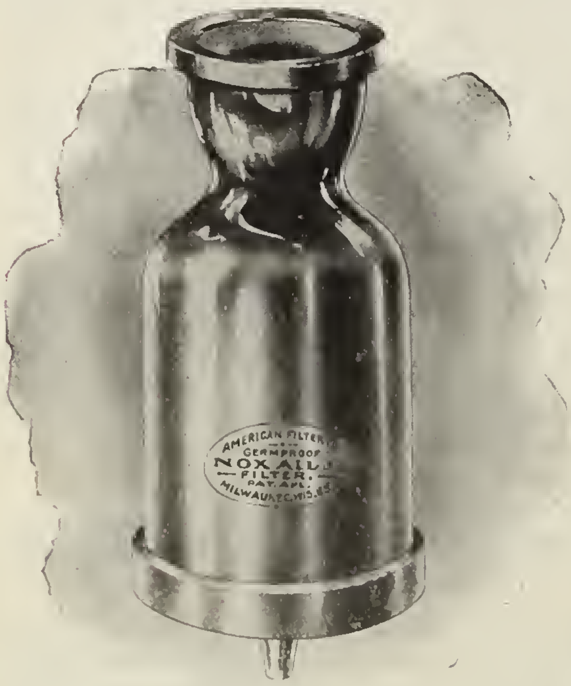


Fig. 1.—Exterior View.

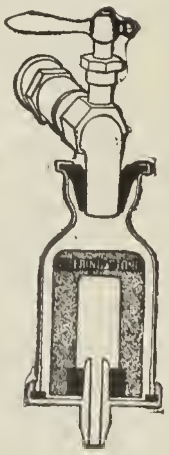


Fig. 2.—Sectional View.

The Noxall, Jr., Filter.

Improved Champion Germ Proof Water Filter.

The Champion Safety Lock Company, Cleveland, Ohio, have brought out the Champion Germ Proof water filters, here illustrated. These filters—five in number—are designed for use in connection with faucets having either threaded or plain outlets. The filters are made of brass, nickel plated, the filtering medium being a Tripoli natural stone tube, from the outer surface of which germs and arrested filth are easily removed. To remove the filtering tube for cleaning it is only necessary to give the bottom a half turn to the left, when the tube can be withdrawn, quickly cleaned, returned to and locked in its proper place, and a water tight joint is automatically made by a simple and ingenious arrangement. Fig. 1 illustrates the style C filters, which have a special three-way faucet attachment for the delivery of either filtered or unfiltered water to be drawn without detaching the filter from its position on the faucet. Fig. 2 shows the small size D filters, for attaching directly to the lower end of the faucet. The advantage claimed by the manufacturers for this line of improved filters is that they make possible sterilized, aerated and sparkling water, and minimize the danger of such diseases as are commonly introduced through the medium of impure water. Catalogues of their entire line will be sent to those interested on application.

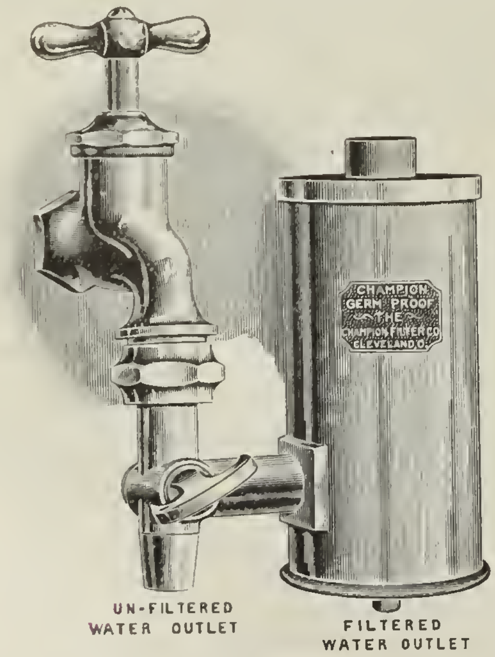


Fig. 1.—Champion Germ Proof Water Filter.—Style C.

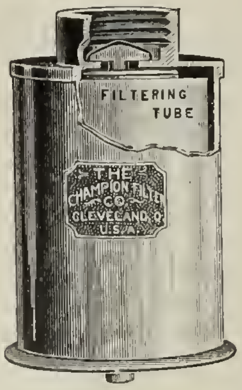
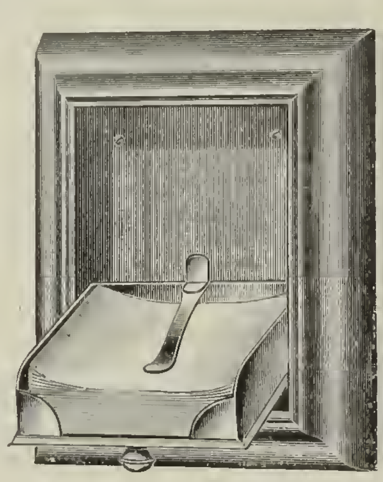


Fig. 2.—Style D Filter.

Enclosed Toilet Paper Holder.

The Searls Mfg. Company, Newark, N. J., whose New York representative is Frederic Klages, 127 Duane street, have added to their comprehensive line of bathroom and household specialties in nickeled brass the Enclosed toilet paper holder, here illustrated, patent on which has been applied for. The important feature of this construction is that except when in use the toilet paper or interior is not seen, making the handsome exterior in keeping with the other attractive appointments of modern bathrooms. The holder is held in position on the wall by means of two inside oval head screws, seen in the illustration. The tray for the paper, taking sheets up to 5 x 7 inches, is pivoted near the bottom on each side, so that by a slight pressure on the front knob it can be either opened or shut, the sheets being kept in position by a flat spring, as shown. The holder is 8¾ x 10½ inches over all, extends from the wall outward 2½ inches, and is finely polished and nickeled.



Enclosed Toilet Paper Holder.

A NOTICE of the dissolution of the copartnership of Whitcomb, Kirkham & Gray has been issued by J. Stewart Kirkham, who will continue to carry on under his own name a Stove, Furnace and Tinware business at the old stand, 140 State street, Springfield, Mass.

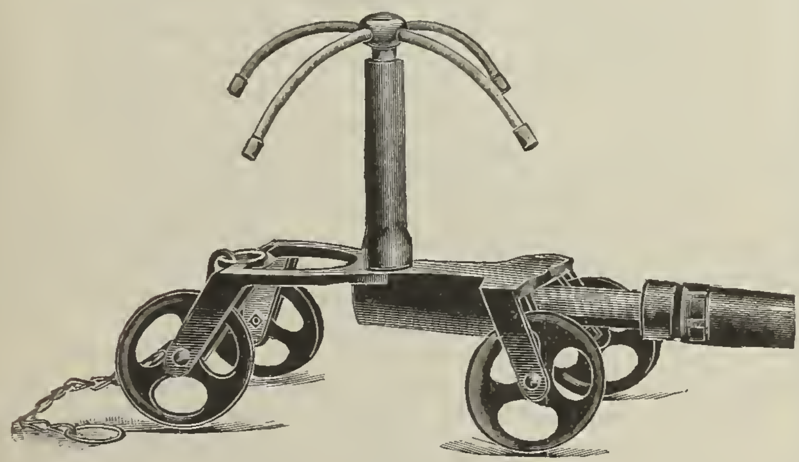
Storing Pot Covers.

A correspondent in Springfield, Mass., writes as follows in relation to the method he has found most handy for storing pot covers:

During the last 40 years we have tried several ways of keeping pot covers so as to enable us to get the right size when wanted. We have used shelves, upright standards on shelves and a stand 6½ feet high, 12 inches at the top and 20½ at the floor, with 13 shelves for covers, but in spite of the utmost care they would get mixed. Now, we have each cover marked the exact size, and hang some two dozen of them on a wire or strong cord, which is strung up in a convenient place. A variety of covers, from 8 inches to 13½ inches in diameter, are hung on each cord; then when a cover of any particular size is wanted we have only to go to these strings of covers and readily find the size needed, getting it the first time, if the right measurement is given. This way of handling covers prevents their becoming mixed up. They are out of the way, and when the supply on the strings gets low and more are wanted, we can readily tell the sizes that are short and order enough to fill up the strings, which hold either one or two dozen covers apiece. In these days when haste is often unavoidable in waiting on customers who wish to get something right away, we find the method described decidedly the best we have yet tried.

New Century Lawn Sprinkler.

Yost-Miller Company, Toledo, Ohio, are manufacturing the New Century lawn sprinkler here shown. The sprinkler is mounted on a four-wheel platform, suitably braced in every direction, the construction being such that the device can be readily wheeled from one point to another without being upset. It is so arranged that any circle, from 2 feet in diameter to 50 feet diameter, can be sprayed with an equal distribution of water. At the opposite end from the coupling to which the hose is attached there is a chain with large ring by which to move the apparatus about.



New Century Platform Lawn Sprinkler.

Stove and Hardware Dealers.

William Cooper has embarked in the Stove and Tinware business at Vincent Town, N. J.

The Tea Tray Company of Newark, N. J., are erecting a one-story brick warehouse, 40 x 125 feet, adjoining their factory at Mulberry and Murray streets.

The Sanitary Dust Pan Company, with principal office at 1232 Market street, Camden, N. J., have been incorporated by Henry L. David, Thomas Clover and George B. Smith, with a capital of $125,000, to manufacture Sanitary Dust Pans, &c.

Charles T. Wilson has started in the retail Stove and Tinware business at Libertytown, Md.

The Trenton Lamp Mfg. Company of Trenton, N. J., have organized and are now doing business under the new title. At a meeting held recently officers and directors were elected as follows: President, H. Van Iderstine; secretary and treasurer, A. J. Fondeville. These officers, together with the following, form the Board of Directors: George Reuter, Jr., of the American Wringer Company; Oscar O. Brewer of the Newark Fire Insurance Company, and Charles G. Hookway of Jersey City. The new company have a capitalization of $150,000 and propose making a number of additions and improvements to their plant and products.

John P. French has formed a partnership in the Hardware, Stove and Agricultural Implement business with Joseph Hare of Bismarck, N. D., under the style of Hare & French. The firm expect to enlarge their stock from time to time, and have already put in a line of Harness and Paints.

Bellevue Pump Company, Bellevue, Iowa, are sending out a catalogue and circulars relating to Kegler's Patent Galvanized Iron Chain Pump Tubing and Curb.

Grand Rapids Refrigerator Company, Grand Rapids, Mich., are distributing a catalogue of more than 100 pages illustrating their line of Leonard Cleanable Refrigerators, including Porcelain Lined and Porcelain Lined Oak Refrigerators, Grocers' Refrigerators, Ice Chests, &c., for the season of 1902.

The Baldwin Refrigerator Company, Burlington, Vt., are sending a folder calling attention to their Baldwin Porcelain Lined Refrigerators, which are offered in nine handsome styles. The outside cases are made of solid oak, with fine raised panels, and trimmed with plain polished nickel plated lever locks and hinges.

C. Kimmell Company, wholesale and retail Hardware, Stoves, Tinware, Agricultural Implements, Harness, Vehicles, &c., El Reno and Weatherford, O. T., have been incorporated with a capital stock of $75,000. The directors of the company are C. Kimmell of El Reno and M. L. Wood and W. T. Shoemaker of Weatherford. The main establishment will be at El Reno.

The National Enameling & Stamping Company of New York, Chicago, St. Louis, Milwaukee and Baltimore are calling the attention of the trade to their fine line of Water Coolers. The company announce that they are prepared to furnish all kinds and sizes of these goods at immediate notice. Large stocks of Coolers are carried at all their branches.

Industrial Exposition in Japan.

The Government of Japan will hold a great national industrial exposition at Osaka, opening March 1 and closing July 31, 1903. A special feature of this exposition, which is primarily a national one, to which the Japanese Government calls the attention of foreign manufacturers, is the establishment in connection with it of a special building for samples of such articles manufactured in foreign countries as may be of value for purposes of comparison or reference in the interests of the industrial advancement of Japan. The primary object aimed at is to afford Japanese manufacturers an opportunity of studying the latest practice of Western invention, with a view to the improvement of the native industries. United States Minister Buck, writing from Tokio to the State Department at Washington, reports that foreign exhibits which are to be used solely for the purpose of the exhibition and which will be re-exported within two months of its close, will be exempt from customs duties. The space set aside for foreign exhibits amounts to about 500,000 square feet. Intending exhibitors are requested to forward applications for space to the office of the Chief Commissioner for the Fifth Industrial Exhibition, at the Department of Agriculture and Commerce, Tokio, not later than June 30, 1902. Such exhibits as are accepted will have to be placed in the building between January 5 and February 20, 1903. The arranging of exhibits of manufacturers who cannot attend to the matter personally or by deputy will be undertaken by the office of the Chief Commissioner on request in writing. No medals or other prizes will be awarded to foreign exhibitors, but in the case of exhibits which are considered to have special merits a letter of thanks will be sent to the exhibitor. The Imperial Government of Japan is trying to arrange special freight facilities for all foreign exhibits.

Commencement Exercises at the New York Trade School.

More than 1000 students and their friends gathered in the gayly decorated auditorium of the New York Trade School, at Sixty-seventh street and First avenue, New York City, on Wednesday night, to attend the commencement exercises of the twenty-first season of the school. In passing through the different shops, those who have visited the school for a number of years could not fail to be impressed with the general excellence of the work and the improvement over the work of past years shown by the pieces on exhibition.

The commencement exercises were opened at 8.30 p.m. by the president of the school, R. Fulton Cutting, who introduced Edward Murphy, chairman of the Trade School Committee of the Master Plumbers' Association. Mr. Murphy expressed his pleasure at being greeted by so many enthusiastic young plumbers, and congratulated them on the very high degree of excellence shown in their work. He said that, like all its predecessors, the class of 1901-1902 had surpassed the achievements of its predecessors, this fact being demonstrated both in their exhibition work and in their examinations, in which he had taken a personal part. He expressed his pleasure that the instructors of the school, not in the plumbing class alone, but in all the classes, seemed to have acquired a mastery of the art of teaching their pupils, and congratulated them on the result, as shown by the high proficiency reached by each class. Mr. Murphy pointed out the possibilities of the future, illustrating the point by stating that it had given him great pleasure to be approached familiarly by a delegate at one of the conventions of the National Association of Master Plumbers, who had outgrown his recollection, but who proved to be a graduate of the New York Trade School, and who reflected credit on the institution by the high place which he had reached in the business world. He urged each of the graduates to strive to reach a similar position. The New York Trade School he regarded as an invaluable institution, not only in the direct good which it does by its own work, but also in being the parent of other trade schools, and, through them, doing great good to an immense number of young men throughout the country. He expressed the opinion that the high standard set at the school and the excellent start it gives to young men not only produces a high grade of plumbers, but also proves that the time of young men to-day is too valuable to be spent in a long apprenticeship. Improved systems of instruction have shown that as much can be taught in as few months as the old apprenticeship system took years to teach, and the school has the effect of turning out a better qualified beginner to attempt the mastering of the trade. The grand opportunity his hearers had enjoyed in this invaluable institution was due, he said, to the interest its founder, the late Col. Richard T. Auchmuty, took in giving the American boy a chance to become a valuable citizen, and no better monument could be erected to his memory than his dearly loved New York Trade School.

At the close of Mr. Murphy's remarks President Cutting introduced William H. Oliver, president of the General Society of Mechanics and Tradesmen of the City of New York, who said in substance: "Success in any vocation is not the result of accident, but of careful training. In every branch of life there is a why and a wherefore, and those who apply themselves can learn them. They will find the search for information an inviting one, which will create a thirst for more. Nothing makes such competent, self reliant tradesmen as the knowledge acquired by those who make the best of their opportunities. When you leave here it depends on the use you make of your opportunities how you will succeed, and on you alone it depends to use the right methods to achieve the highest success. Broad and liberal methods will suggest co-operation with others to benefit and be benefited on the road to success. Associations have always proved beneficial when invested with the right spirit and having high aims. You have been here but a short time to prepare, and there is yet much to learn. Be ever ready to act up to your highest information and your efforts will be crowned with success."

The certificates of the graduates were then distributed by Thomas J. Tuomey of the Master Plumbers' Association and John H. McCullagh of the General Society of Mechanics and Tradesmen, after which Superintendent H. V. Brill read the names of the graduates on the roll of honor, placed there by their excellent records.

When all the certificates had been distributed D. M. Russell, on behalf of the plumbing class, spoke of the enjoyment experienced in the four months' course at the school and the grateful feeling held for each instructor. He then presented each of the instructors with a token of the appreciation of the members of the class.

The gifts were acknowledged on behalf of the instructors by John Delehanty with a few brief remarks. T. B. Walmsley, the instructor in lead burning, and Edward L. Bahr, superintendent of the steam fitting class, were also pleasantly remembered by their respective classes, and an announcement was made that the cornice class had sent to the residence of their instructor, William Neubecker, a handsome oak roll top desk.

On behalf of the *Painters' Magazine* J. Barton Allen presented a gold medal to the most proficient student in the painting class, which was received by Orville T. Crane of Atlantic City, N. J. The Industrial Publication Company, whose editor had graduated from the carpentry class, presented a set of technical books to the best pupil in the carpentry class, which was gained by Andrew Schillinger of Garfield, N. Y., honorable mention being made of S. W. Brown. George A. Suter then presented, on behalf of the committee of the New York City Master Steam and Hot Water Fitters' Association, their gold medal to the most proficient young steam fitter, and though all in the class were said to have done remarkably well, John T. Huber of Erie, Pa., secured the coveted honor, A. A. Thompson of Detroit and E. D. Sorg of Brooklyn securing honorable mention.

The exercises were then closed by some well chosen remarks by President Cutting, who pointed out the value of trades unions when they teach men to live for each other, rather than for themselves, so that all of the members may be benefited.

Another branch of instruction at the school not mentioned in the general commencement exercises, which has been conduced by A. A. Hammerschlag, consists of a series of practical demonstrations and discussions for stationary engineers and electrical workers. During the past season these informal talks were attended by 195 men engaged in these lines, who came not only from New York City, but also from towns at a considerable distance, on the dates set for the discussion of some set topic as arranged on the list of topics which was sent quite generally to men engaged in these lines.

Roll of Honor Graduates.

DAY PLUMBING CLASS.

Paul H. Keller, Shelton, Conn.
Benjamin F. Miller, Gainesville, Fla.
Harry L. Hanson, Butte, Mont.
Andrew J. Hummel, New Ulm, Minn.
Charles A. Rote, Stockbridge, Mass.
Charles V. Baumann, Newark, N. J.
Clarence A. Gray, Allegheny, Pa.
C. P. Ashley, Brooklyn, N. Y.

EVENING PLUMBING CLASS.

Nicholas J. Vincent, New York.

DAY CORNICE CLASS.

Albert Kastner, Louisville, Ky.
Max Wm. Pehl, Poughkeepsie, N. Y.

DAY STEAM FITTING CLASS.

John F. Huber, Erie, Pa.

EVENING STEAM FITTING CLASS

Charles Schwenker, Brooklyn, N. Y.

Regular Graduates.

DAY PLUMBING CLASS.

Allen, Loren D., Hammond, N. Y.
Armstrong, Chas. L., Wheeling, W. Va.
Ashley, Chas. P., Brooklyn, N. Y.
Berry, Dwight C., Roseburg, Ore.

Borthwick, John A., Portland, Ore.
Baumann, Charles V., Newark, N. J.
Becker, George, Maquoketa, Iowa.
Buchtenkirch, John, New York City.
Cook, William G., Bushkill, Pa.
Curran, Joseph V., Wappingers Falls, N. Y.
Doran, Edward F., Greenville, N. J.
Dour, Leon T., New York City.
Doering, Frank L., Wapakoneta, Ohio.
Delacour, George A., Derrick City, Pa.
Dickinson, James W., Port Washington, N. Y.
Donahue, Thomas F., New York City.
Evans, John T., Butte, Mont.
Enright, Michael J., Raritan, N. J.
Ford, Thomas J., Brooklyn, N. Y.
Finn, James, Youngstown, Ohio.
Fretz, Harry N., Cedar Grove, N. J.
Gay, Henry K., Nashua, N. H.
Garrison, Ralph H., Vineland, N. J.
Gunther, Jno. M., Jr., Spring Valley, Ill.
Grant, William D., Kane, Pa.
Gould, Clarence R., Friendship, N. Y.
Gray, Clarence A., Allegheny, Pa.
Howard, John G., Raleigh, N. C.
Hogan, Thomas E., New York City.
Hanson, Harry L., Butte, Mont.
Hummel, Andrew J., New Ulm, Minn.
Hewes, Frank L., Osceola Mills, Pa.
Harding, Stedman, Tunhkannock, Pa.
June, Carroll A., Brandon, Vt.
Keller, Paul H., Shelton, Conn.
Kennard, Frank C., Roanoke, Va.
Kane, Thomas A., New Brunswick, N. J.
Kane, Michael J., New Brunswick, N. J.
Konow, Louis, Newark, N. J.
Kinghorn, Lyman J., Hardwick, Vt.
Lawrence, T. Henry, Corning, N. Y.
Ledig, Otto A., Newark, N. J.
Loeble, Herman, Troy, N. Y.
Lavelle, James A., New York City.
Michals, Edward A., Rondout, N. Y.
Minor, Halsey P., Farmer, N. Y.
Mason, Metcalf P., Greenfield, Mass.
Miller, Benjamin F., Gainesville, Fla.
Michael, Carl H., Talladega, Ala.
McKnight, George F., Owen Sound, Ont., Canada.
McKittrick, William B., Brooklyn, N. Y.
Nacey, Harry M., Chicago, Ill.
Noel, Rudolph W., Kingston, N. Y.
Ormsby, Rexford P., Norwich, N. Y.
Plastow, Joseph W., Greenville, N. J.
Parent, Herbert J., Lewiston, Maine.
Russell, David M., Waynesboro, Pa.
Rhodes, Theodore S., Great River, N. Y.
Reed, Howard B., Battle Creek, Mich.
Ruggles, Archie E., Fowlerville, Mich.
Rote, Charles A., Stockbridge, Mass.
Scott, Charles T., Peekskill, N. Y.
Siegel, Edward, Brooklyn, N. Y.
Siefert, Fred. A., Peoria, Ill.
Trevithick, Thomas, Jr., Wilkes-Barre, Pa.
Vores, Alfred D., Jr., Brewster, N. Y.
Williams, Arthur R., Cohoes, N. Y.
Walrond, Lorne B., Petoskey, Mich.
Welker, Clark H., Ionia, Mich.
Widmayer, Fred., Jr., Long Island City, N. Y.

DAY STEAM FITTING CLASS.

Beck, Carl, Sault Ste. Marie, Ont.
Foss, Solomon M., Washington, N. J.
Goedecker, Emil, West Hoboken, N. J.
Huber, John F., Erie, Pa.
Petrank, Carl, Sayville, N. Y.
McCarthy, Dennis V., Friendship, N. Y.
Scarry, John, Erie, Pa.
Thompson, Alfred H., Detroit, Mich.
Walker, William, Detroit, Mich.
Whitley, Fred'k N., Brooklyn, N. Y.

DAY CORNICE CLASS.

Baumann, Hermann, New York City.
Kastner, Albert, Louisville, Ky.
Kretchmann, Gustav, Brooklyn, N. Y.
Pehl, Max W., Poughkeepsie, N. Y.
Schrumpf, William T., West Hoboken, N. J.
Weeber, Otto J., Guttenburg, N. J.

Oxygen Regenerator.

The oxygen regenerator for purifying vitiated air is being adopted by the Fire Department of Paris, France. It weighs only 5 pounds, says *Fire and Water*, and is based on the principle that sodium bioxide in continual reaction with water will render respirable an atmosphere which it would be impossible otherwise for any living being to breathe. A clockwork apparatus drops at regular intervals pieces of sodium bioxide into a water section of an aluminum ventilator. The firemen intending to enter poisonous air put on divers' dress and carry an oxygen respirator connected with a helmet by two rubber tubes. The apparatus contains 150 grams of sodium bioxide, which insures an adequate supply of oxygen for respiration during one hour.

Proposed Foundry Trade School.

In the *Journal* of the American Foundrymen's Association for March is a paper by Thomas D. West, in which he urges the need of an endowed school for teaching the trade of molding and the management of foundries. Mr. West is the chairman of a special committee of the American Foundrymen's Association, appointed for the purpose of furthering the project for the establishment of such a school. He argues that the limited knowledge of the trade required by the average molder under present conditions generally fails to imbue the workman with the ambition to excel in this trade that would be awakened by an education which would give him a fuller insight into the theory and practice of all branches of the foundry trade. He also claims that the present lack of any kind of scientific training for foundrymen results in the lack of use of their natural intelligence on the part of most workers in foundries, who entirely lose sight of the fact that increased skill and knowledge would command for them higher wages and advancement in their trade. Mr. West proposes that a course at such a school as is projected should cover three and a half years, and the plan would be to impart all information possible in the three branches of molding—viz., green sand, dry sand and loam, and in the management of cupolas. This course, Mr. West asserts, would result in turning out better mechanics than does six or seven years' experience in a general foundry, under present conditions. He would include in the curriculum the study of mechanical drawing, chemical and physical metallurgy and business forms and practice, as well as lectures on the general principles of founding, the instruction being given on three or four evenings of each week. The school, he says, should be located in a prominent iron center, and he believes that it could be easily established for from $75,000 to $100,000. With this end in view he appeals to philanthropists and those interested in the subject for assistance in endowing an institution of the character described, which would help to the acquirement of a highly remunerative trade poor youths who might otherwise go through life unskilled and without prospect of earning more than a mere subsistence. He believes that a school of this kind would in time become more than self supporting. The committee of the proposed foundry trade school consists of Thomas D. West of Sharpsville, Pa., chairman; E. H. Putnam of Moline, Ill., and Dr. Richard Moldenke of New York City.

Molders' Strike at Chattanooga.

All the union molders in Chattanooga, Tenn., went out on strike last week as a result of the attempt of the Ross-Mehan Foundry Company to put a nonunion foreman of a negro shop in as foreman of the union shop. One-third of the nonunion white molders also walked out. The molders demand that all negro workmen employed by the company in shops with white workmen be discharged or transferred to shops working only negroes. These include all the large foundries and manufacturing establishments of iron goods in Chattanooga. Among those which the strike affects especially are the Casey and Hedges Mfg. Company, one of the largest boiler factories in the South; the Cahill Iron Works, makers of grates and iron mantels; the Southern Malleable Iron Works, the Price & Evans brass foundry, the Chattanooga Car & Foundry Company, the Ross-Mehan Company, the Chattanooga Soil Pipe Works and a number of other smaller concerns. A general strike of all foundry employees is said to be threatened. The companies are now running mainly with negro hands. The situation is complicated and seems to depend on the ability of the foundry companies to secure outside help.

SUPPLY MEN AT ATLANTIC CITY.

It has been previously announced that an effort was being made to have the plumbing supply trade to meet at Atlantic City, N. J., at about the time of the annual convention of the National Association of Master Plumbers. The result has been that the Association of Manufacturers and Jobbers of Plumbing Supplies, which has its membership east of the Alleghany Mountains, will hold a meeting at the Hotel Chelsea, Atlantic City, on Wednesday, June 11. While the Central Supply Association, composed of Western members of the trade, has arranged to meet at Put In Bay, Ohio, on June 23, representatives of this association will attend the meeting at Atlantic City, and it is probable that the deliberations of both bodies will be conducted on practically parallel lines.

While the definite statement cannot be made at this time that the differences beween the Supply Associations and the Master Plumbers' Association are to be adjusted, efforts to that end have not been lacking on the part of those who have the best interests of both bodies at heart, and there are grounds for the hope that the assembly of conventions at Atlantic City this year will close with a mutually satisfactory adjustment of the existing issues. Such a conclusion would greatly increase the enjoyment by all who are delegated to represent the interests of their associates of a sojourn at this great seaside resort.

SUMMER MEETING OF THE HEATING ENGINEERS.

Owing to the number of men interested in heating who will be in attendance at other conventions at Atlantic City in June, the Board of Governors of the American Society of Heating and Ventilating Engineers have decided to hold a summer meeting of the society at Atlantic City on June 16. A call for this meeting having been ordered by President A. E. Kenrick, it was issued by the secretary, W. M. Mackay, under date of April 10. Information as to the place for holding the meeting and the hotel accommodations will be issued later. Owing to the other conventions assembling at Atlantic City at the same time, the members will be enabled to secure transportation at the rate of a fare and a third for a return trip ticket. Doubtless the members will be requested to prepare papers and present topics for discussion at this meting.

President Kenrick announces the appointment of the following committee to work in conjunction with the Board of Governors in making arrangements for a special anniversary meeting at the tenth annual meeting of the society, which will be held in New York City in January of 1904: Frank K. Chew, Hugh J. Barron, B. F. Spangland and P. H. Seward of New York City; W. H. Switzer, Utica, N. Y.: Andrew Harding, Detroit, Mich.; Robert C. Clarkson and P. Gormly, Philadelphia; Andrew G. Paul, Boston, and James H. Davis, Chicago.

HEATING BOILERS.

Wherever the manufacturers of steam and hot water boilers have met for several months past the advisability of advancing prices has been discussed, and as there are two sides to the question strong arguments have been presented on both sides. Since January 1 an advance of about 20 per cent. has taken place in the price of iron, and recently there has been an advance in molders' wages. Furthermore, all of the different fittings and fixtures which go into the construction of the house heating boiler also cost more money. In view of these facts those who favor an advance in price have a stronger argument than heretofore. Still there are not wanting some who argue that a conservative policy, which would prevent, or at least delay, any advance in price for the present, would tend to the best interest of the whole trade. Those heating contractors who are canvassing for prospective sales can hardly make an error if they urge an early decision on the part of their customers, so as to enable them to place, as early as possible, specific orders for goods needed. Where it is found impossible to close contracts early it will be well to figure and estimate so as to guard against being caught by an advance, or to provide for a clause in estimates and bids which will secure the contractor in case advances should be made. Those who are successful in closing contracts early can not only prepare to complete the work advantageously, but will have more time to canvass for further business, and they will have a good argument to influence more trade. The earlier work sets in for the fall the more each one can accomplish. Further, even should boiler prices continue unchanged, past experience demonstrates that there are other factors in a heating apparatus which are apt to fluctuate more readily.

Death of Joshua Lambert.

Our readers will regret to learn of the death of Joshua Lambert, vice-president of the Clayton & Lambert Mfg. Company, Detroit, Mich., which occurred on March 1. Mr. Lambert's health had been steadily failing for over a year, but his interest in the company's business, which he had been instrumental in building up from a small beginning to its present large proportions, brought him daily to the factory, and although unable to perform his customary duties, up to the last day of his life he gave the company the benefit of his counsel and was deeply interested in all that advanced their interests. The immediate cause of death was heart failure. Joshua Lambert was born in Livonia, Mich., on February 14, 1834. The Clayton & Lambert Mfg. Company were organized in 1889, with Milton J. Clayton as president, Joshua Lambert vice-president, and J. E. Lambert secretary and treasurer. These officers, together with Charles R. Lambert and Bert Lambert, formed the Board of Directors, all having served the company continuously since their organization. The three last named are sons of the late Joshua Lambert. Mr. Lambert's attractive personal qualities endeared him to a large circle of attached friends. His sunshiny disposition and his anxiety to make life pleasant for others, made friends of all who knew him. This was particularly the case with the employees of the Clayton & Lambert Mfg. Company, to whom his death came as a personal loss. He leaves a widow, three sons and one daughter, all of whom reside in Detroit.

THE LATE JOSHUA LAMBERT.

THE SANDUSKY PLUMBING & BOILER COMPANY of Sandusky, Ohio, have secured the contract for furnishing and making all the pipe and valve connections at the new factory of the American Crayon Company. The Buffalo Forge Company will install the plant for drying the crayon and for ventilating and heating the building.

THE STEAM FITTERS' CONVENTION.

The following notices have been sent out for the annual convention of the National Association of Master Steam and Hot Water Fitters:

To All *Master* Steam and Hot Water Fitters of the United *States*.

The fourteenth annual convention of the National Association of Master Steam and Hot Water Fitters will be held in Atlantic City, N. J., on June 12, 13 and 14, with headquarters at Hotel Rudolf.

For the benefit of those who are not familiar with the present workings of the association, we will state that about eight years ago the men who wisely directed the affairs of the National Association saw that the best way to secure the objects sought for was to at once declare to the trade that "Trade Protection" meant what the words implied—to wit, the protecting of the contracting master fitter.

This was done by promulgating "Trade Resolutions," adopted by the National Executive Committee September 24, 1894, and indorsed by the seventh annual convention, held at Philadelphia, June 15, 1895.

Some difference of opinion as to the feasibility as well as the practicability of the resolutions as originally proposed and amended from time to time caused the members to make a change in the wording and purport at the eleventh annual convention, held in Buffalo, June 7, 8 and 9, 1899.

Manufacturers and dealers have been very liberally treated under the works of the present resolutions, and they certainly cannot complain of any unjust or unreasonable requests emanating from this association.

There are without doubt numerous master fitters in this country who ought to consider their own welfare to the extent of becoming a member of their trade association, and thereby exhibit a spirit of fraternity which would directly and indirectly, sooner or later, be of material benefit to themselves and the trade at large.

An invitation to join this association has heretofore been extended to the trade at large, and is repeated at this time. It must be borne in mind, however, that only such as can demonstrate that they are regularly established in business and worthy of recognition as master steam and hot water fitters are eligible to membership in the National Association.

Bear in mind that the fourteenth annual convention is not a convention for delegates only, and the ordinary sessions of the convention will be open to the trade at large, but the executive sessions can only be attended by members.

Headquarters and meetings will be at Hotel Rudolf.

Yours fraternally,
National Executive Committee.
Chairman, Henry L. Hall, New York.
John J. Collins, St. Louis, Mo.
John D. Hibbard, Chicago, Ill.
Edward Tunstead, Minneapolis, Minn.
Francis A. Williams, New York.
President, Stewart A. Jellett, Philadelphia, Pa.
Vice-President, Alfred E. Kenrick, Brookline, Mass.
Treasurer, Albert N. Chambers, New York.
Secretary, Henry B. Gombers, New York.

To the *Manufacturers* and Dealers in Accord with the National Association of *Master* Steam and Hot Water Fitters:

Gentlemen: We herewith extend to you a hearty invitation to attend the fourteenth annual convention of the National Association of Master Steam and Hot Water Fitters, which will be held in Atlantic City, N. J., on June 12, 13, and 14, with headquarters at Hotel Rudolf.

We will be glad to welcome the manufacturers and dealers who so honorably stand with us in preaching and practicing trade protection.

Come to the convention with the idea of renewing old acquaintances as well as to make new ones.

This invitation in the Bulletin is to be considered the "Official Call" to manufacturers and dealers in accord.

Trusting that we will see a goodly number "In Accord" at Hotel Rudolf, Atlantic City, N. J., June 12 to 14 next, we remain.

Yours very truly,
National Executive Committee.
By Henry L. Hall, Chairman.
Henry B. Gombers, National Secretary.

◆

The Master Plumbers' Association of Bayonne, N. J., have appointed the following committee to arrange an amalgamation with the Bayonne Building Trades Council: J. T. Gilbertson, W. F. Haskard, John Davaney. The following committees have also been named: By-laws, J. Davaney, T. J. Conroy, William Higgins; License, John Higgins, W. T. Haskard, John Davaney; Price-List, John Higgins, John Davaney, Harry Eipstein, W. O'Neil, W. C. Devlin; Arbitration, John Hovell, A. T. Gill, W. F. Haskard, T. Conroy, F. Denton.

◆

NEW YORK STATE STEAM FITTERS' MEETING.

The following call has been issued for the New York State steam fitters' convention:

The eighth annual convention of the Master Steam and Hot Water Fitters' Associaion of the State of New York will be held in the city of Schenectady on Friday, May 2, 1902. Meeting will be held at the Edison Hotel.

A meeting of the Executive Committee will be held Thursday, May 1, at 8 o'clock p.m., and the convention will be called to order at 11 o'clock a.m. on Friday, May 2. The business of the convention will no doubt be completed and adjournment had on Friday.

At this meeting the annual election of officers will take place and other business of importance be presented. Our association is in good working order, but we need your personal help to give it the strength that it should have in order to cope with the serious questions which all master fitters of this State will meet with during the current year. All master fitters who are regularly engaged in the business are invited to attend the meeting and be present at all sessions, except executive sessions.

This is not a delegates' convention, as every member in good standing is entitled to be present. As it is naturally the quiet season of the year for our members, we shall expect a very large attendance.

Henry L. Hall, President.
John W. Danforth, Secretary.

◆

New York City Notes.

Although there are many large jobs under way, the plumbing contracts for which have been given out, very little work is yet ready for the plumbers and the busy shop is the exception. Jobbing business has completely fallen off, there being nothing doing in that line in any of the shops.

⁂

The Greater New York Association had a large meeting last Monday at the rooms of Manhattan Branch.

⁂

Richmond Branch had better get together, or the baby in the Bronx will walk far past it.

⁂

Manhattan Branch will elect delegates to the National Convention at a meeting on April 15.

⁂

Judging from the number of signs that have come down lately, some of which have been up for years, the Bureau of Buildings is strictly enforcing the law against the exposing of such signs by unlicensed plumbers. A few prosecutions with conviction and heavy fines would put most of these people out of business.

⁂

Apparently the Tenement House Department is having trouble in getting field inspectors from the Civil Service Board. It has not as yet made its influence felt so as to affect the plumbing trade by orders for changes.

⁂

The Water Department is much exercised over the waste and is talking about having meters placed in every building. Should this step be taken it will mean considerable business for the trade.

⁂

Among the plumbers who have good contracts in hand are W. Y. Jack & Co. of 730 Lexington avenue, who have a ten-story loft building for the Bliss Estate on Twenty-third street, between First and Second avenues; the Speyers School, a young ladies' college, at Lawrence street and Amsterdam avenue, and a private house for F. G. Loyd at 36 East Sixty-first street, of which C. P. Webster is the sanitary engineer. T. J. Cummins has just finished plumbing a large piano factory at Eleventh avenue and Fiftieth street.

FLUSHING AND CLEANING SMALL TERRA COTTA SEWERS.

BY J. N. S.

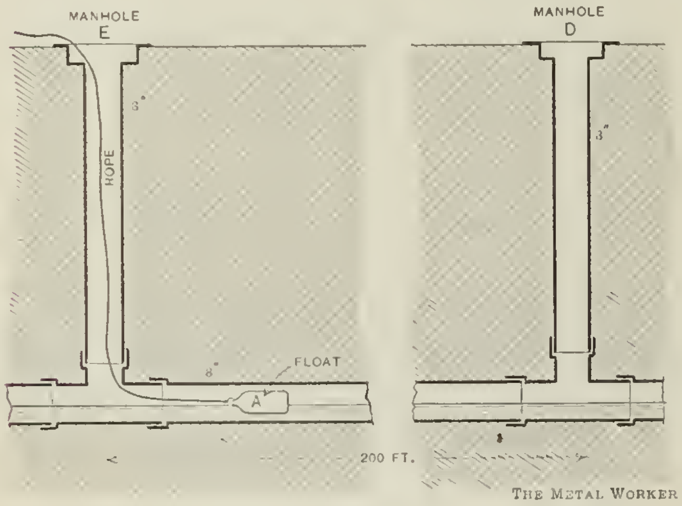
There are numerous cities throughout the country in which the majority of the streets or avenues are reserved for private residences, and where the rain water leaders of the residences cannot be connected to the house drain, for the reason that the sewer in the street would be too small to carry off both the rain water and the waste from the drain pipes of the residences. Since the rain water is not allowed to empty into the sewers to help in keeping them flushed, some other method must be adopted. The lateral sewers are quite often not larger than 8 inches in diameter and are made of salt glazed terra cotta pipe.

FLUSHING SEWERS.

In places where a good fall can be given the pipe and where there is an abundant water supply, the fire hydrant can be used to flush the sewer by connecting a line of fire hose to a hydrant convenient to a manhole situated at a high point on the line of sewer. The other end of the fire hose is lowered down the manhole and shoved well into the pipe. The water is gradually turned on until the full head of water rushes into the sewer, thus washing away all deposits which may have accumulated in the pipe. It not only helps to flush the sewer but also blows out the water main occasionally.

AUTOMATIC FLUSH TANKS.

Should the grade of the sewer not be so rapid and possibly the water supply not so abundant, automatic contrivances must be used for flushing, such as automatic flush tanks. These tanks must be constructed at a high point on the line of sewer and they are usually made of brick cemented inside and outside to make them water tight. They ordinarily have a capacity of about 200 gallons of water, but can be made to hold more or less, according to the needs of the sewer. A tank can be so regulated that it will discharge its full contents into the sewer at least once in every 24 hours, or twice, if deemed necessary, by allowing a stream of water to constantly flow into this tank from the water main through a pipe on which is placed a regulating cock to control the supply of water to the requirements of the tank.



Flushing and Cleaning Small Terra Cotta Sewers.—Fig. 1.—Floating a Line Down to Draw Cleaner.

THE ACTION OF TANK SIPHON.

This tank must be below frost and have a suitable cover perforated so that air can be admitted and also expelled, and it is discharged by means of a siphon. Different devices are used to make the siphon work; but as all siphons consist of a short and long leg it may be annular in form, or of the return pattern. The short leg reaches very nearly to the bottom of the tank, with the long leg extending down to a tilting device, or else a weir-like contrivance, which, in turn, must empty directly into the sewer. The bottom of the long leg must be sealed at the beginning of the discharge and unsealed at the conclusion. As the water rises up in the tank it expels the air which is in the short leg until it starts to fall down in the long leg, thus sealing the bottom of the pipe for about 1 inch in depth. As the water drops down it carries the air with it until a partial vacuum is secured, when the siphon will begin to work. The tilting tank will then drop and remain so until the siphonage is complete, when air will rush in, the tilting tank drop back into position and the tank proper be restored to its normal condition. On the other hand the weir will be siphoned out through a pipe specially arranged for this purpose, also restoring an equilibrium. Sewers which are cleansed by this method can never become foul, and in consequence the intercepting trap can be dispensed with.

A SCOURING FLUSH.

To thoroughly cleanse or flush a sewer, it should be filled with water its entire length, if it is possible to do so, so that the higher as well as the lower part would be full. It would draw in fresh air in proportion to the amount of water held in check, and upon its sudden discharge would ventilate the sewer. But should the topography of the locality not permit of a good fall being given to the sewer pipe, on account of the land being of a flat or nearly level nature and where none of the former methods could be used to advantage, then cleaners must be relied on to keep the sewers free from filth.

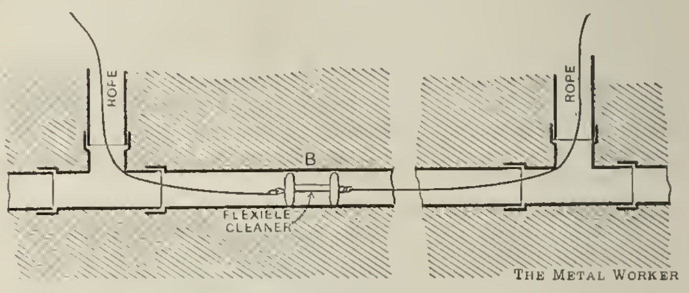


Fig. 2.—Flexible Cleaner in Use.

MECHANICAL CLEANING.

At every 100 or 200 feet a manhole or access hole is constructed to permit of a line being dropped down in the sewer on the end of which is a float. This floats with the current until it reaches the next manhole. It is then caught and a stronger line is drawn through, on which a cleaner is firmly secured. This cleaner is the full size of the pipe. It is pliable, as if it were too rigid it would be apt to get wedged and cause endless trouble. As this cleaner is pulled through it holds back the water in the sewer until the pipe is full. It is then suddenly pulled out at the lower end. It scrapes off all the grease or other filthy matter which adheres to the pipe, which the water will wash away. Anything which will not float away is caught and brought up to the surface.

I present a sketch which I hope will explain how the operation is performed. This is continued from manhole to manhole until the entire line of sewer is cleaned, and so on from street to street, by men who are constantly employed for this class of work. In Fig. 1 is shown the line with float, and at B is the flexible cleaner. E is the upper manhole and D the lower one.

SIZE OF THE HOUSE DRAIN.

The house drain may be 4, 5 or 6 inches in diameter, as the case may be; but it is argued by eminent engineers that a pipe 4 inches in diameter is fully capable of carrying off the sewage from the majority of private houses. As nothing but the liquid or semiliquid waste is supposed to pass through those house drains, it will have a better chance to cleanse itself, from the fact that the fuller this pipe will run at every discharge the better chance it has to flush itself. Some of the houses may be located as far back as 50 feet from the sidewalk line, which would require a long stretch of pipe in order to connect the house with the sewer.

LOCATING THE HOUSE DRAIN.

The following method is used in some cities to determine the course in which this house pipe was laid so as to locate it in case that there should ever be an obstruction in it: A lamp hole is placed on the pipe on a direct line with the pipe coming through the front wall and usually about 1 foot inside the property line at the front. It consists of a tee placed in the line of pipe with the side connection facing upward. The pipe is extended vertically up to the surface of the ground and the top finished with a suitable cover. When there is an obstruction this cover can be removed, and should the obstruction be in the street water will stand well up in this pipe. If not, then the obstruction is nearer to the house.

REMOVING AN OBSTRUCTION.

If there are no provisions in the house to permit the rodding of the drain and should the pipe be underground, the lamp hole or guide pipe will enable the plumber to know where to dig. The pipe can then be tapped and cleaned. If the obstruction is in the street the lamp hole will serve as a guide for digging down to the sewer so that it can be rodded, providing there are no broken pipes. The pipe between the house and the lamp hole could also be rodded out if it were found necessary to do so. Such a system of marking the drain saves useless digging, saves the lawn from being destroyed and is always a sure indication as to how the pipe has been laid.

DISPOSING OF SURFACE WATER.

The rain water leaders must be carried out to the curb stone in a separate pipe a little way under ground, a hole being cut in the curb stone to allow the rain water to flow into the gutter, or else it may be allowed to flow out on the surface of the ground and get away as best it can, tne gutter being graded to a storm inlet. This inlet may empty into the same sewer in which the lateral sewers also empty, or else into a separate pipe which would be constructed for that purpose. Very often the street can be graded to an adjacent stream. When this is possible all storm water can be allowed to flow away by this means.

At another time I will speak about connecting to large sewers.

Acetylene Generators in England.

Some time ago a committee was appointed by the British Parliament to inquire into the whole subject of acetylene generators. The report of this committee has just been issued, and from it we give the following quotation for the information of those of our readers who are interested in the subject:

> A large proportion of the generators examined belong to the automatic class. In these the object is the gradual generation of the gas as used, whereas in the non-automatic types the whole of the gas which can be generated from a given charge of carbide is evolved in a short time, and a gas holder has to be provided large enough to contain it. The contention is that the generation of the gas as used and the absence of a large gas holder are advantageous or convenient. When all goes well this may be so, inasmuch as under the skilled supervision and favorable conditions of the tests made by us serious difficulties did not arise, and in general the apparatus worked well. We are not satisfied, however, that under the varied conditions of use, especially with unskilled labor, this would always be the case, and we do not think that the advantages aimed at by the designers of automatic apparatus are sufficient to make it worth while to incur the possible trouble which we fear may be met with in the practical use of automatic generators, especially those of complicated design. In certain circumstances, with due safeguards, the employment of automatic generators may be admittedly convenient.
>
> We think it right to point out that, while the generators have in no instance shown evidence of being otherwise than safe under the conditions of the test to which we have subjected them, many are, in our opinion, of unnecessarily and undesirably complicated design, and some are not sufficiently strong in construction. On the whole, having regard to the conditions of use which must often prevail, we consider that in the selection of an acetylene generator regard should be had to the following desiderata: 1, Simplicity of action and design; 2, strength of construction; 3, high efficiency, as indicated by the yield of gas per pound of carbide; 4, low pressure in generator, and, 5, facility of removal of the residue.

CHILD'S PORTABLE FOLDING COT.

BY MARTIN L. KAISER.

The child's portable folding cot shown in Fig. 1 is formed of ⅜-inch gas pipe and fittings, and is so simple to make as to hardly require a description of the construction. The two rectangular frames formed by the elevated side rails and the rails to which the canvas is stitched are put together without unions, by means of a long thread. The distance from A to B in Fig. 2 should be greater than the distance from B to D, so that the base from A to E shall be greater than the spread of the canvas from C to D at whatever hight the cot is set.

A Child's Portable Folding Cot.—Fig. 1.—General View.

The canvas should be somewhat wider than enough to reach across the side bars when the cot is at the lowest position desired. One edge of the canvas should be securely stitched to one of the side bars, and the other edge stitched around a loose piece of ⅜-inch pipe of the same length as the side bar, with a cap on each end. This loose bar, with the canvas attached, is passed over and under the side bar of the cot, as shown in Fig. 3, and fastened at the desired position to each end of the opposite side bar by means of a strong cord or light strap. If only one predetermined hight is desired it is only necessary to stitch the canvas permanently to the two side bars. The frame work shown in Fig. 3 may be easily made in two hours, and old pipe and fittings may be used if desired. While the cot illustrated is for a child's use, by using different dimensions and larger pipe it may be suited to "children of a larger growth."

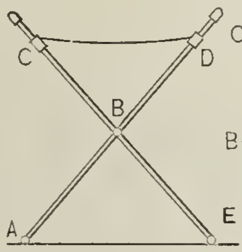


Fig. 2.—End View.

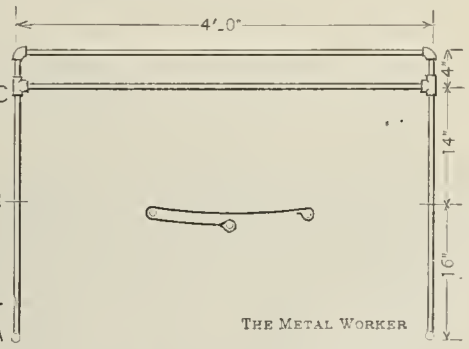


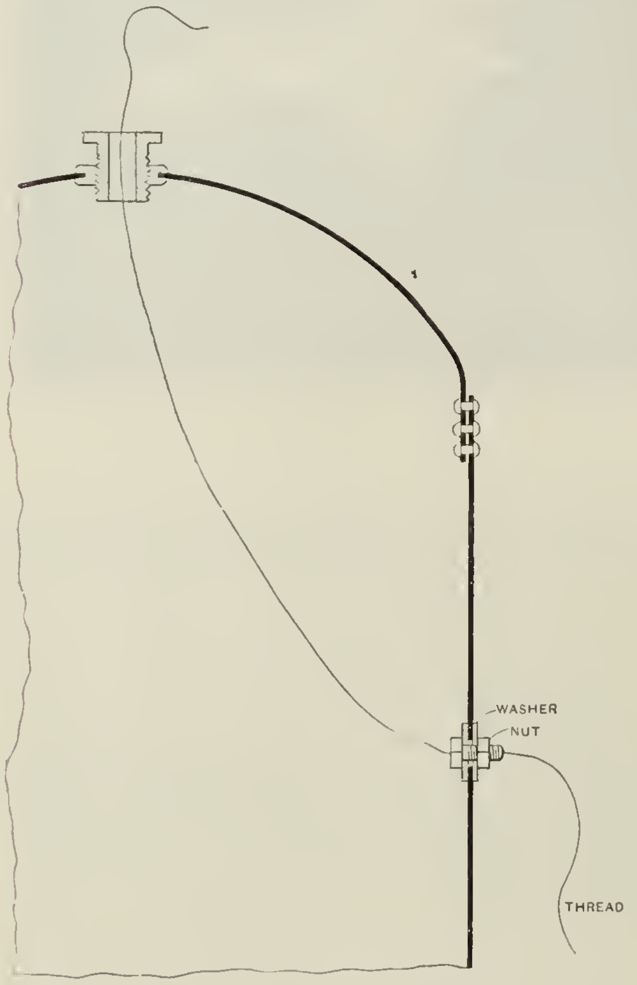
Fig. 3.—Side Frame and Canvas Bottom.

It may be noticed that to move the cot from one room to another it is only necessary to draw the two side bars together, folding the pillow and blankets within the canvas without otherwise disturbing them. Threaded acorn fittings may be used to finish off the foot pieces, or round ball foot pieces may be made of hard wood and the shank driven into the bore of the pipe.

REPAIRING A RANGE BOILER.

BY D. F. N.

Some of the readers of *The Metal Worker* will doubtless be interested in the method of repairing a range boiler resorted to by a man who did not wish to incur the outlay for a new boiler when the old one had begun to leak. The boiler was made of galvanized iron and the shell was too thin to permit of the use of a drift punch to make an opening to be tapped so as to be stopped by means of a screw plug. In the first place, as the owner was somewhat handy, he emptied the boiler and soldered up the hole, but this did not last more than a few days after the boiler became hot, and it began to leak again. He then employed a plumber to fix up the boiler so that it would stand until he could afford to have the old boiler replaced by a new one. The plumber removed the old solder and cleaned off the boiler, making a perfectly round hole, where it leaked, large enough to take a ¼-inch bolt with a soft copper washer on the inside. The bolt and the washer were secured together and dropped into the boiler through the hot water opening at the top, a piece of thread being tied to each end of the bolt. It was a simple matter to insert a wire through the hole and catch the thread upon the lower end of the bolt. The bolt was then drawn through the hole and another soft copper washer placed on the outside. A cement composed of litharge and glycerine was worked into the hole between the inside of the boiler shell and the washer. Some of the same cement was put on the outside of the boiler shell under the washer. When enough cement was put on the washers were drawn up tight against the shell by the tightening of the nut. When the cement had hardened it not only made a perfectly tight job, but also one that has stood for a considerable time. This method has been found serviceable for stopping holes in iron tanks, pipes and other places, where replacing the material would have caused considerable expense. It has proved its efficiency where the material is not thick enough to be drilled and tapped to be filled with a plug. The same method can be adopted for stopping sand holes in thin castings.



THE METAL WORKER

Repairing a Range Boiler.

The Model Heating Company in New York.

The steam and hot water heating trade are receiving notice from the Model Heating Company of Philadelphia that their New York branch has been removed to 88 Centre street, where they have a fine showroom, in charge of Percival H. Seward. The announcement is in the form of a four-page circular, one page of which is a map of New York showing the location of the concern. Another page gives instructions how to reach their office, while on the last page is a view of the building, so that it will be recognized on approach. On entering a most attractive display of boilers and radiators and other appliances for heating contractors is presented. The showroom is exceptionally well lighted from both front and rear, and the display of the Model sectional boilers, Dwarf tank heaters, Tobasco tank heaters and hot water storage tanks and all hights of the Acme and Corinth steam and hot water radiators is so arranged that the goods can be examined from all sides and the best advantage. The boilers are decorated in aluminum bronze with the relief parts in jet black. The radiators are finished in gold and various shades of bronze, and the Tobasco heaters and tanks are finished in jet black with maroon japan relief. All of the samples are set on marble slabs on the floor, which is covered with linoleum, the center aisle being covered with a handsome carpet. The effect, as a whole, is both striking and pleasing, from its cleanliness and brilliancy. At the front of the showroom a desk is provided for visitors, while the office staff are comfortably quartered at the rear, adjoining the private office of Mr. Seward.

The company also have a warehouse at 82 and 84 Centre street, where they will carry a large stock, not only of boilers, radiators, valves, specialties, pipe and fittings, but of everything that is needed in the construction of an up to date heating apparatus. The warehouse is well arranged for convenience in handling goods in the various departments, and is connected by a telephone system with the office and salesroom. These changes were made for the purpose of affording the trade in the vicinity of New York the best possible facilities for securing not only the Model boilers, but everything that a heating contractor may need.

The product of the Kewanee Boiler Company, one of the largest producers of tubular boilers and fire box boilers, will also be handled in the East by the Model Heating Company, which arrangement will be found of great advantage to steam fitters having large contracts. The trade in the vicinity of New York are invited to call at 88 Centre street, which is within easy walking distance of the principal business sections of the city and convenient to all the railroad stations and ferries. One of the principal attractions on the showroom floor is the hot water heating apparatus for a ten-family apartment house, consisting of a Model sectional steel boiler, with a water front section for connecting with a hot water storage tank of 250 gallons capacity, for supplying hot water and heating the building in the winter season. The storage tank is also supplied with openings and connected with a tank heater designed for furnishing the different apartments with hot water during the summer season, when the steam boiler is not in use.

The Ideal Fitter.

The American Radiator Company, Chicago, have issued a new edition of their hand book for steam fitters, with prices effective April 1. This book in its previous editions proved very popular in the steam fitting trade and the new and revised edition is expected to be even more acceptable. Although it is of pocket size, the contents are comprehensive, and the book is not a mere pamphlet, as it contains 86 pages. It gives illustrations of the company's full line of steam and hot water boilers, with complete price-lists, and also furnishes price-lists of radiation together with illustrations and price-lists of fitters' supplies, such as valves, floor and ceiling plates, pipe hangers, and expansion and storage tanks. A complete telegraph code is a valuable feature of the book.

Radiation for Residences.

Appreciating the value to the trade of some method for calculating the amount of steam or hot water radiation needed for a dwelling, James A. Harding, Sharon, Mass., has distributed to the trade cards bearing the following formulæ:

FORMULÆ FOR DWELLINGS.

A = Glass surface. B = Wall surface.
C = Cubic contents. X = Direct radiating surface.

Hall, first story, $X = A + \frac{B}{4} + \frac{C3}{55} \times G.$

Room first story, $X = A + \frac{B}{4} + \frac{C2}{55} \times G.$

Room second and third story, $X = A + \frac{B}{4} + \frac{C}{55} \times G.$

Add 10 per cent to results for north and west exposures.
Indirect steam radiation, = X + 25 per cent.
Indirect hot water radiation, = X + 50 per cent.
Catalogue boiler rating for steam, = X + 25 per cent.
Catalogue boiler rating for hot water, = X + 20 per cent.
Catalogue boiler rating for indirect, = X + 75 per cent.

Temperatures.			Hot			
Out doors.	Of room.	Steam. G.	water. G.	Size of mains.*	Steam.	Water.
				1 inch.	50	50
—10°	75°	0.32	0.56	1¼ inches.	100	100
0°	75°	0.28	0.49	1½ inches.	250	150
10°	75°	0.24	0.43	2 inches.	425	300
—10°	70°	0.29	0.50	2½ inches.	600	600
0°	70°	0.25	0.43	3 inches.	950	800
10°	70°	0.22	0.37	3½ inches.	1,250	1,100
—10°	65°	0.26	0.44	4 inches.	1,600	1,500
0°	65°	0.23	0.38	5 inches.	2,500	2,500
10°	65°	0.20	0.32	6 inches.	3,600	4,000

Vertical Pipes One Size Smaller.—If condensation drips back into steam main and water and steam flow in same direction use one size larger main, and if water and steam flow in opposite directions two sizes larger main.

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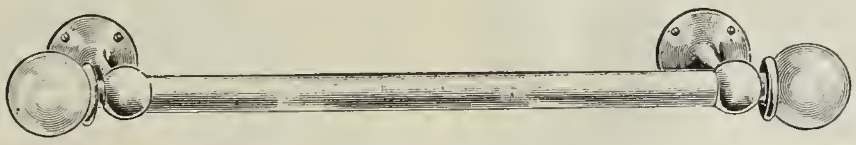
* For indirect, one-half larger.

Mr. Harding is the engineer and general representative for Eastern New England of the Boynton Furnace Company of 207 and 209 Water street, New York, and has his office at his residence, at Sharon, Mass. The card is in the form of a desk blotter and bears a cut of a Boynton vertical sectional steam boiler.

Towel Rack with Glass Balls and Bar.

The Searls Mfg. Company, Newark, N. J., represented in New York by Frederic Klages, 127 Duane street, have recently put on the market a towel rack with glass bar and glass balls at the ends, as here illustrated. The rack is made in three sizes, 24, 30 and 36 inches long, extending 3¼ inches from the wall. The glass balls are 2¼ inches in diameter, the annealed glass portions contrasting handsomely with the nickeled brass sockets. It is the intention later to bring out a line of similar racks with ornamental glass balls instead of the plain surface, as here shown.



Towel Rack with Bar and Balls of Glass.

Apprenticeship and Technical Instruction.

For many years it has been recognized, says the *Decorators' Gazette and Plumbers' Review*, London, that the apprenticeship system has been gradually dying out, with the result that young men are not having the opportunities for learning their trade which the apprenticeship system afforded. This, at any rate, is the popular idea, and on it is based the assertion that mechanics generally are not so skillful as they were years ago when every lad was compelled to serve his master for a term of years in order to gain a thorough knowledge of his trade. But it is not always that the popular view of these matters is the right one, and in this particular case, more especially as it applies to plumbers, there is a large amount of error combined with a very little truth.

If it is true, and this is not disputed, that the apprenticeship system is falling into disuse, there must be some cause for it, and when inquiries are made it will be found that in nearly 75 per cent. of the cases the apprenticeship system has had just the reverse effect to that intended and expected. For it will be found that young men who have been bound to a (so-called) master plumber have been engaged during most of their time in work which cannot by any stretch of imagination be called plumbers' work, with the result that at the end of the five or seven years' term they are not much nearer becoming plumbers than they were at the start. While others who have not bound themselves as apprentices have been free to stay or leave any particular firm and choose for themselves where they shall learn the trade which they have decided to master. One is not advocating the rolling stone style of picking up a trade, because it is open to many abuses which need not be enumerated here, but this view which many take of the matter no doubt accounts for much of the dissatisfaction which exists with regard to the apprenticeship system.

Young apprentices can see their fellows who are able to give up the work at one firm and go to another where the work is of a much superior class, and of a more extensive character, and although the free man is not supposed to have the same facilities and privileges as the apprentice, so far as the learning of the principles and practice of the trade is concerned, it does not depend so much on the master as on the young man himself, and his determination to make the best of his opportunities whenever they present themselves to him, and in this way many have become really good mechanics.

Nevertheless, there are several reasons why the apprenticeship system should be retained, and, if possible, made more extensive. Anything, therefore, that is calculated to bring the system more into favor will be welcomed by all those interested in the plumbing trade. With this object in view the Plumbers' Apprenticeship Board, which is composed of representatives of the London Society of Associated Master Plumbers, the United Operative Plumbers' Association of Great Britain and Ireland, and the Plumbers' Company, have prepared a new up to date apprenticeship indenture, which, in addition to the usual provisions, states that he "shall attend and diligently study at the evening classes of any technical institution or trade school now or hereafter to be established in—— as his said master shall direct, and as shall be approved by the Plumbers' Apprenticeship Board, and shall once in every year of the said term, after the first year thereof, submit himself for examination in technical knowledge of the said trade of a plumber, and of the said art of sanitary plumbing, &c." Now that the technical education movement has made such an arrangement possible in most towns of any importance, it will, of course, give young men who have not the privilege of seeing the best of work in the shops in which they are apprenticed the opportunity of acquiring much more practical and technical knowledge than was possible under the old system. As a matter of fact many masters, to their credit, have for some time been sending their apprentices to the plumbing classes, and have in many cases been paying the fees for them.

We think that a clause to this effect in the indenture would be an improvement, considering the small amount of wages apprentices receive during their term of service.

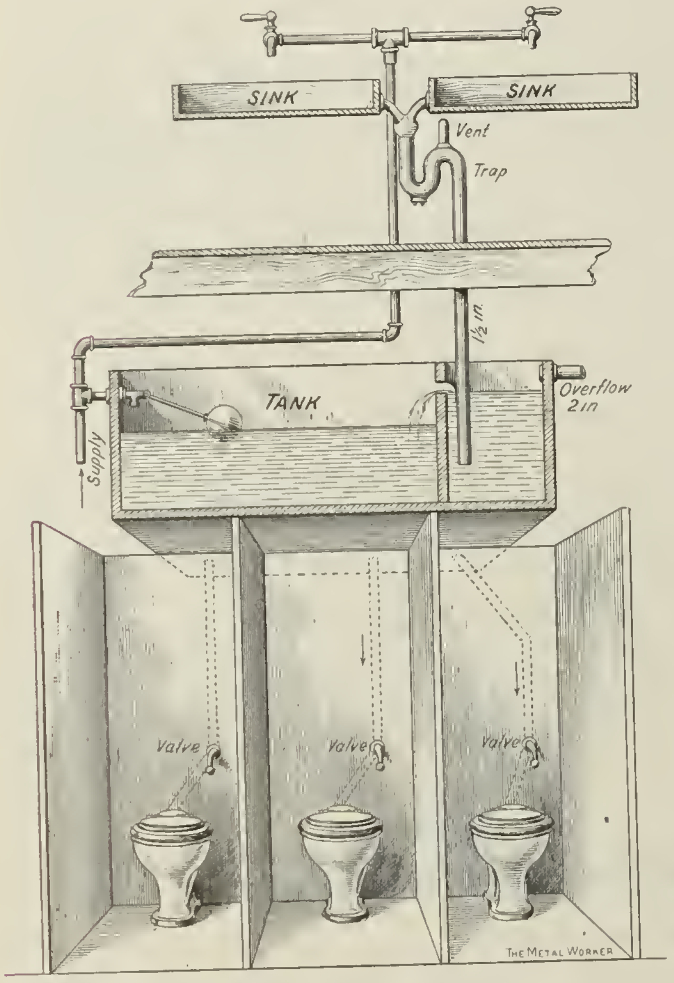
W. A. T. Smith, New Haven, Conn., agent for the Kelsey Warm Air Generator, is installing two batteries of No. 24 Kelsey Generators in the new City Mission Building. He is also installing a battery of two large Heaters in the residence of Lewis S. Welch.

DIRECT FLUSHING CLOSETS.

BY H. M.

Direct flushing valves for water closets are designed to avoid the use of individual tanks. They have been more favored by the trade and the public during the past three or four years than at any former period; but the idea is not new. They are admirably adapted for use on vessels and are economical in buildings when circumstances are favorable. The valve is generally termed an "'ometer," with whatever prefix the inventor or manufacturer may fancy to make a trade name and to distinguish it from the other 'ometers on the market.

The direct flushing valve, no doubt, is an evolution from the practice of the old time plumber in locating his house tank in the attic, so as to flush the closet by pulling a chain attached to a cistern valve in the bottom of the tank, and of course the less turns in the pipe and the fewer the pulleys on the chain the better it worked. So, when convenient, the tank was placed over the closet. Sometimes the plumber was bold enough to pipe direct to the closet and put a lever handle stop cock in the flush above the closet seat. The writer has seen a steam whistle valve so used, a chain and pull being attached to the lever of the valve.



Direct Flushing Closets.—Fig. 1.—An Early Method of Direct Flushing.

Fig. 1 illustrates the first genuine direct flushing job known to the writer. It was in an economical landlord's apartment house. A photograph gallery used more water than all the other tenants combined, and being on the top floor the landlord himself conceived the idea of flushing the closets on the lower floors with the practically clean water from the print-washing sinks of the gallery. The plumber put an oblong tank over the closets, arranged a settling chamber at one end of the tank and piped the waste of the sinks into the settling chamber, from which the water overflowed through a fan seal into the main tank. All the closets were connected with the main tank by separate flush pipes, each being fitted with a Carr closet valve with full size couplings. The spindle ends of the valves were fitted through the marble and the spindles fitted with levers riding on the caps like the ordinary telegraph cock. To flush the closet it was only necessary to push the lever, the length of flush being adjustable by the side screw, as usual. The waste water was supplemented by the regular house supply, being connected to a ball cock in the tank, as shown.

Some of the flushing valves on the market are elaborate, but any plumber familiar with the principles of the common Carr valve, having either a groove in the barrel or a passage controlled by a screw to let the water pass from behind a cup leather, will have no trouble in handling the direct flushing valves.

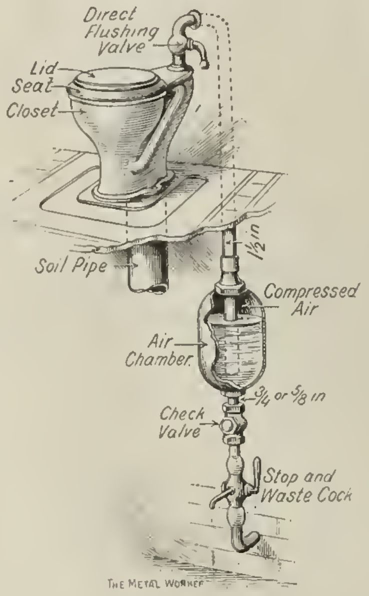


Fig. 2.—A Direct Flush Pipe with Air Chamber.

Some of the advantages of the direct system are: No individual tanks are necessary, which is economical on a large job; the closets may be set under windows or stairways; the numerous flush pipes, supplies, ball cocks and general accessories are not needed; the annoyance from leaking tank linings is avoided; and, on the whole, the job looks better. The disadvantages are that unless the water pressure is excellent an overhead tank is necessary, and the manufacturer usually demands that nothing less than a 1½-inch service be used. A 1½-inch service for a residence or ordinary job is out of the question. Most water companies could not be induced to put in such a service for a small job, and if such was provided the continuation of it would be too expensive to justify installing one or two closets.

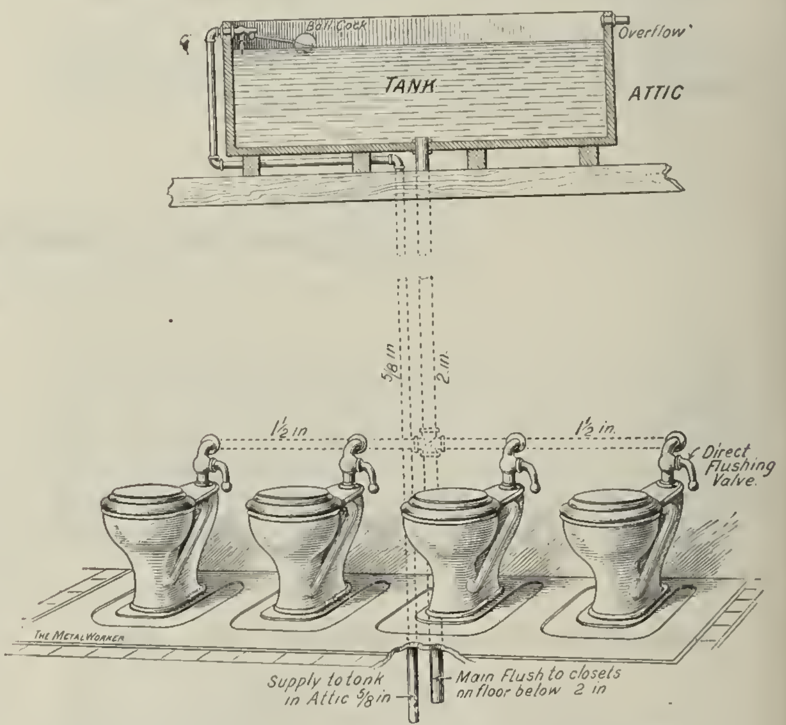


Fig. 3.—A Battery of Closets Flushed from Attic Tank.

The direct flushing closet, as now sold, is not cheaper than the individual tank closet; the actual service is no better, and with a single tank to supply a number of closets, fed by a single line of supply pipe and the closets flushed through or from one general flushing main, the failure of any part of the system except a closet, valve or branch pipe would interfere with the use of all the closets. For this reason it is good practice to put stop valves on branch pipes, and where there are several batteries of closets, or one battery and several single installations, it is best to have at least two flushing mains, controlled by stop valves.

Fig. 2 represents a single closet flushed direct from the ⅞-inch street service. The check valve above the stop and waste cock is to hold the water so as to get the full benefit from the compressed air in the chamber at all times. The closet flush pipe is 1½-inch and is extended nearly to the bottom of the chamber. Two closets would work on the same flush pipe with only one air chamber, and even more if the chamber is made large enough, say 12 x 18 inches for four or six closets, instead of 9 x 12 for one or two. It is not safe, as a rule, to let a battery of closets depend on an air chamber but one or two in a residence or store office work well. There should be at least 10 or 12 pounds effective pressure at the closet level, even when the service is 1½-inch throughout. With small service and air chamber the pressure should be at least 30 pounds. Air tight closet tanks and small range reservoirs or boilers answer well for air chambers on this kind of work. It is not necessary to follow the sketches literally, but the principles must be adhered to, however the connections are made.

Fig. 3 shows a battery of four closets with all essential connections.

The direct flushing system is better adapted for large work than for small jobs, and will probably never be seriously considered in competition with individual tank closets for single installations. The plumber should exercise the same common sense regarding them that he would in any other line of work, and while poor judgment or mistaken ideas or overzealous effort to be up to date will certainly be responsible for many jobs of the kind, unsatisfactory for the mere reason that the conditions rather than the system are at fault, the trade will soon learn to discriminate and the direct flushing closets will find their way into only such jobs as will bring their good points into evidence.

Howard & Morse.

On April 1 David R. Morse and his son, Frederick R. Morse, retired from the firm of Howard & Morse, 45 Fulton street, New York City, whose salesrooms have been continuously located for 40 years on that street. The business, that of the manufacture of wire cloth and wire work in manifold forms, was founded by the late John W. Howard in a basement in the same street in 1852. In 1862 John W. Howard formed a copartnership with David R. Morse, who had been employed by the De Witt Wire Cloth Company, and this continued until his death in 1892, his sons, Edward S. Howard and William B. Howard, as well as Frederick R. Morse, a son of the junior member, having in 1890 entered the firm. In 1883 they adopted the manufacture, sale and application of the Blackman power ventilator to industrial establishments and public buildings. With the erection of those of huge dimensions a new field was opened and quickly occupied, the firm's enterprise inspiring the formation of an engineer and construction corps for the scientific ventilation of the properties. In such application they have been eminently successful, and have now contracts, among many others, for the execution of such work for the new Hall of Records, new Astor Hotel, Hotel Martinique, Chamber of Commerce, Mount Sinai Hospital, Young Men's Christian Association, Hanover Bank and Hotel Essex, all of which are elaborate in details. Edward S. Howard and William B. Howard having purchased all rights, title and interests of the retiring partners, have decided to conduct the business under the old firm name, and with facilities to increase its output.

Al. J. Potts & Co., St. Peter, Minn., were awarded the $4000 contract for installing the heating plant and doing the plumbing in the new Roman Catholic Church at Sleepy Eye.

Education of Plumbers in Relation to Public Health.*

BY GEO. VINCENT.

Technical education enables the artisan to produce work which gives comfort or enjoyment to the users or beholders. The finished work of an artist is a combination of form and color, which gives intense pleasure to the artistic mind. The finished work of a carpenter satisfies the eye, while accommodating the whole body. The combined work of the architect (designer or artist) and the constructive tradesmen (mason bricklayer and carpenter) produce our comfortable modern homes. The additional assistance of the plasterer, painter, &c., renders those homes beautiful and artistic.

There is something, however, still lacking in the home to make it habitable—viz., an abundant supply of pure water and an efficient system of removing all offensive materials—liquid and solid. The removal of the waste and foul matters to the street sewers brings with it a great danger, that of entrance into the dwelling of the foul and germ laden gases of the sewer. Upon the plumber devolves the duty of securing the one while preventing the other. The faulty work of other tradesmen may do little harm should it escape detection, but the faulty work of the plumber, hidden and unobserved, may carry disease and death. Disease from insanitary conditions often baffles the most skilled doctor. The cause of the disease was improper plumbing work, and the effect frequently death. To prevent a further effect from the same cause the plumber is called in, the defective work is removed and replaced by sanitary drainage.

To save life and prevent disease is the duty and privilege of the plumber, an estimation of his place which found eloquent expression by Sir James Graham, Mayor of Sydney, in welcoming the convention. The worthy Mayor is not alone in his public appreciation of the importance of good plumbing. Dr. Yarnold, the eminent English expert, in his official report on the smallpox epidemic, states: "The doctor will find his skill and medicine of little avail if the patients are to live in ill drained and ill ventilated houses." Another eminent British authority says: "The public demands from the plumbing craft an intelligent knowledge of the best and safest methods for the expeditious removal of decomposing products, and for efficient prevention of their return into the dwelling." These quotations are sufficient to show the high appreciation of the services of the plumbing craft held by the medical profession.

It is simpler, cheaper and more prudent to prevent than to cure. When will the public and governing bodies properly appreciate this fact?

The plumber is misunderstood, his work depreciated and the public therefore consider his profits excessively large. Where are the army of plumbers who have retired in affluence? They exist only in the imagination of those who write books and make jokes. The actual master plumber has but a very poor return for the capital and experience which his business demands.

It is the duty of plumbers to keep pace with every new development of sanitary science. Sanitation is a progressive science. Methods considered scientific and correct ten years ago are to-day discarded as obsolete and incorrect. Education is the greatest need of the plumbing trade. This twentieth century will transform the plumber from an artisan to a scientist. It should be as impossible for a plumber to carry on his business without proving his qualifications as it would be for a physician to attempt to heal disease without a diploma. It is a crime chargeable to the Parliament of a country when an inefficient system of licensing is in vogue and when no house to house inspection is insisted upon.

The system of licensing of plumbers is a disgrace to the city of Melbourne, and it is an imperative duty of the Parliament of Victoria to compel those carrying on the business of plumbing to prove their fitness by passing at least a similar examination to that insisted on in this city of Sydney.

It is not enough that a plumber should have sufficient skill to connect different pipes together, make the joints water tight, and leave his work finished in a neat and trim manner. A system of plumbing, perfect in handicraft, may be dangerously defective in planning and arrangement. To place the entire onus of responsibility upon an inspector to detect all such defects is imprudent and dangerous. Public opinion rightly places this responsibility upon the plumber. Close supervision, inspection and testing of all sanitary plumbing work is necessary. No safeguard should be omitted. The public should be guarded against unscrupulous and irresponsible people who exploit an important business for gain and profit. There are incompetent master plumbers just as there are incompetent physicians; the greater need, therefore, for legislation in order to protect the public.

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* Paper read before the National Master Plumbers' Convention, Sydney, N. S. W., 1901.

The position claimed for the plumber in this paper demands the possession of educational qualifications; not education in all its branches, but that knowledge which will enable him to design wholesome and economical plumbing systems, based on the principle of sanitary science; to direct his workmen in every detail; to set out and lay out all the work, so that no workman need deviate from his instructions.

Plumbing being, however, an ever progressive science, we must look to the boys of to-day, who will become the men of to-morrow, to raise the status of the trade. Modern business methods preclude the possibility of any boy properly learning the intricate business of plumbing during working hours in the workshop. He has theory as well as practice to acquire. With the practical side he becomes familiar, daily assisting competent men, and getting to know the tools and their uses. He has, however, only limited opportunities of gaining skill in the use of tools and the treatment of materials. Handicapped as he thus is in the gaining of practical skill, he is even more disadvantageously placed in gaining theoretical knowledge. This side of our trade is too often overlooked and misunderstood. "An ounce of practice is worth a ton of theory" is a very misleading proverb. Is not theory a statement of something which has been proven by the experience of some other men?

Technical schools are an actual necessity as an adjunct to the workshop, and Sydney is to be congratulated in possessing so splendid an institution as the Technical College at Ultimo, where a complete study of the practice and theory of plumbing is pursued under the most favorable conditions.

It is a matter of regret that the Technical College of Melbourne (the Working Men's College) has not given to sanitation the same prominence as the Sydney institution. The practical class has been since its inception in competent hands and useful instruction has always been given. The benefits of this class, however, have been taken advantage of by a very large number of people who had no right to be there—men preparing to pass the examinations necessary to secure the certificate of the Melbourne and Metropolitan Board of Works. In this way the class, through no fault of its own, has been made a factory for half taught plumbers. While affording full means for acquiring the handicraft, its value has been depreciated by the open method of admitting students who were not, and never had been, associated with any plumbing shop for the purpose of learning the trade. It must be admitted, however, that the handicraft of the trade has been taught in the Melbourne college by a competent instructor ever since its inception. But it is a regrettable fact that instruction in the theory of plumbing has been almost entirely neglected. The attention of the college authorities has been called to this neglect, a neglect which has been made apparent by the absolute incapacity of the students to answer the simple questions forming the theory paper at the annual examination held by the Education Department. The responsible position of a master plumber makes it imperative that a thorough knowledge of the theory of plumbing should be imparted. Yet these students, who are to become the future masters, are without the necessary tuition. The establishment of a sanitation department on the same lines as in Sydney should be insisted on, and the control of the department given to a competent practical man capable of instructing the students in the theory and principles of this important science. Personal effort on the part of master plumbers is also necessary, and this can be best put forth by assisting in every way the education of apprentices and assistants, and by visiting at regular intervals the Technical College, so as to increase the efficiency of these institutions.

The organization and reforms necessary for the proper education of plumbers may be tabulated as follows:

1. A uniform and efficient system of apprenticeship, providing for compulsory attendance at a technical college.

2. Reorganization, where necessary, of all technical colleges and trade schools, so that they may become true adjuncts of the workshop, limiting the students to apprentices engaged in learning the trade; such schools to be so equipped that every facility and appliance is provided for the proper and adequate course of instruction in the handicraft and theory of domestic sanitation and drainage, as well as the other branches of the trade.

With every plumber possessing such experience and knowledge of sanitation, the natural legislation that should, and doubtless would, follow would be the compulsory licensing or registration of every person who wished to carry on the business of plumbing. The diploma necessary to secure licensing or registration should be only attainable by those who have successfully passed through the course of instruction in the handicraft and theory of sanitary science in the technical college.

May the time soon come when the National Association of Master Plumbers of Australia will take rank with other professional associations, and when all its members, by an exposition of their skill and knowledge, have justified their possession of a diploma which entitles them to engage in the important business of plumbing; our annual conventions will then become noteworthy gatherings, the public looking to them to furnish the latest practical developments in sanitary science.

Washington Plumbing Regulations.

Colonel John Biddle, the Engineer Commissioner of Washington, D. C., says the *Star*, has recommended to the district board a number of amendments to the plumbing regulations in Sections 7 and 128, relating to gas fitting. The city solicitor recently held that the commissioners have authority for these amendments, the object of which is to allow the setting of gas stoves and the tapping of water pipes for steam fixtures in certain instances by others than registered plumbers. The stove dealers and steam fitters have long sought these amendments. The amendment proposed to Section 7 in regard to gas fitting is as follows:

That on application a general permit be given to each stove dealer to connect gas ranges or stoves with any gas supply system in accordance with the provisions of these regulations, provided that not more than 15 feet of pipe shall be laid or run in any one instance, and provided a suitable outlet has been inserted by a registered gas fitter for the purpose of making said connection, and upon the approval of the inspector of plumbing in each case that the supply pipe is of sufficient size. In every case where such outlet shall not have been provided it will be necessary to secure the services of a registered gas fitter to perform all necessary work to place the said gas range or stove in connection with the gas supply.

The proposed amendment to Section 128 in regard to steam fitting reads:

That hereafter any steam fitter who desires to engage in the erection of any heating apparatus requiring a connection with the water supply system may procure a permit to make the desired connection, provided that not more than 15 feet of pipe shall be laid or run in any one case, and provided a suitable outlet shall have been inserted by a registered plumber for the purpose of making said connection. In every case where such outlet shall not have been provided it will be necessary to secure the services of a registered plumber to perform all work required to furnish said heating apparatus with suitable connection to the water supply.

Ontario Master Plumbers.

A meeting of 30 of the principal master plumbers of the Province of Ontario, Canada, met in Pythias Hall, Toronto, on March 29, and formed the Provincial Plumbers' Association. A constitution and by-laws were adopted and the organization was perfected by the election of the following officers:

President, William Mansell, Toronto.

Vice-president, William Clarke, Hamilton.

Secretary, W. H. Meredith, Toronto.

Chairman of Legislation Committee, T. H. Wieland, Barrie.

Chairman of Sanitary Committee, A. Rogers, Hamilton.

Chairman of Apprenticeship Committee, Charles Taylor, Brantford.

Chairman of Essay Committee, R. Ross.

The next annual meeting will be held in Toronto on Thanksgiving Day.

PLUMBERS and steam fitters who are called upon to set large hot water storage tanks of from 150 to 1000 gallons capacity will be interested in a circular issued by Jacob F. Oberle, 780 Second avenue, New York, devoted to the Oberle Patent Supporting Fittings. They are made of cast iron in a variety of sizes and are threaded for wrought iron pipe. It is claimed that these Fittings not only afford a substantial support, but also save time and expense in setting up hot water storage tanks, whether vertical or horizontal.

Heating and Plumbing Notes.

The master plumbers of Duluth, Minn., are said to be opposed to the plumbing ordinance that is before the council of that city, claiming that it has provisions that will increase the cost of plumbing at least one-half. The ordinance provides for a plumbing inspector, which is also held to be an objectionable feature.

The Merrill Plumbing & Heating Company, Merrill, Wis., have moved their business to their own building at 1007 East Main street, where they make a fine display of Plumbing Fixtures.

The Board of Supervisors of the Almshouse at Schenectady, N. Y., will receive bids until April 15 for heating and ventilating the Almshouse Building.

The plant of the Homestead Valve Mfg. Company has been removed from Pittsburgh to Homestead, Pa., where the company have secured a much larger establishment and will be enabled to materially increase their output.

The Mansfield Plumbing Company, Passaic, N. J., have purchased a property on Washington place, which they will alter for use as a plumbing shop.

E. F. Rudderow, 120 Federal street, Camden, N. J., has recently completed the plumbing and drainage system in the extensive building in that city used by the American Cigar Company for factory purposes. Automatic self flushing closet ranges and long several-part lavatories are a part of the equipment of four different floors of the building.

The plant of the Tyler Tube & Pipe Company, Washington, Pa., will be considerably extended in the coming summer.

Jacob Dome has moved his plumbing shop to the corner of Duke and Philadelphia streets, York, Pa.

The Walker & Pratt Mfg. Company, 31-35 Union street, Boston, Mass., are sending out an advance circular devoted to the Crawford Boiler for steam and hot water heating. This Boiler is made in five sizes of grates, from 20 to 32 inches in diameter. It is round in form, and the construction not only provides for a free circulation of the water, but also for the exposure of a large amount of heating surface.

In the District Court, sitting at Austin, Texas, several cases pending against the members of the Texas Master Plumbers' Association for penalties aggregating $44,000,000 for alleged violation of the anti-trust law were dismissed upon motion of District-Attorney Warren Moore, who instituted the suits. The suits were dismissed on the ground that the laws on which they were based are unconstitutional.

Charles W. Goger is about to build a three-story stone and brick store and plumbers' shop, 20 x 54 feet, to cost $3500, at the southwest corner of Twenty fourth street and Montgomery avenue, Philadelphia.

The journeymen steam fitters of Milwaukee, Wis., are elated over the result of an investigation concluded at Chicago a few days ago by President Gompers and a number of other labor leaders, in which they held that steam fitters were in the right in a controversy which had arisen with the plumbers over work to be done in buildings. The decision just made at Chicago is the second one made by the international officers in favor of the steam fitters on the question. It holds that the plumbers have no right to make any connections for the heating of buildings or similar wrought iron work, but that they must confine themselves to the attachment of bathtubs, water pipes, boilers, washbowls, &c., with water connections.

George Gaertner has been appointed plumbing inspector of Saginaw, Mich.

Oliver H. Stinson, senior member of the firm of Stinson, Kennedy & Co., plumbers, at 213 Wood street, Pittsburgh, Pa., was struck by a car on the Pittsburgh & Birmingham line on April 6. He sustained serious injuries, from which it is thought that he cannot recover.

Col. S. J. Fox, president of the National Pipe Bending Company, New Haven, Conn., is recovering from another operation made necessary by an injury to his leg many years ago. Colonel Fox has been a patient sufferer for years, but, notwithstanding, has been constantly active in business and public affairs.

"The Master Plumbers' Association of Worcester, Mass.," says the *Telegram* of that city, "threatens the city of Worcester, the Washburn & Moen department of the American Steel & Wire Company and a few other great big corporations. The city and the steel trust may start a plumbing supply factory of their own."

The Egleston Square Hardware & Plumbing Company, Timothy J. Hartnett, manager, formerly of 3117 Washington street, are now located in new quarters at 3105 Washington street, Egleston Square, Mass.

W. F. Rafferty, Dayville, Conn., has been awarded the contract for plumbing the new Bradley Building, in that city. Bundy Heaters are now being installed.

The Iowa Plumbing & Heating Company of Davenport, Iowa, have filed amendment to their articles increasing their capital stock from $5000 to $25,000.

A. H. Funke, 101 Duane street, New York, is distributing an illustrated catalogue of Baldwin Acetylene Lamps, for use in drifts, tunnels and mines of every sort, or wherever open flame Lamps can be used. These carbide burning Lamps not only give a brilliant light, but, it is claimed, are much more economical than candles.

The Vanderman Plumbing & Heating Company, Willimantic, Conn., have been running their foundry 11 hours a day in order to fill orders for Vanderman's Extension Soil Pipe Fittings and other Plumbing Specialties.

Herbert G. Candee, secretary of the Board of Education of Rochester, N. Y., will receive bids until April 25 for heating and ventilating the East High School Building in that city.

Adolph Weidmann, a well-known and very popular salesman of the National Tube Company, died on March 22 at Houston, Texas, of appendicitis, at the age of 34 years. He was born in Belleville, Ill., and at an early age entered the employ of the St. Louis branch of the National Tube Works, where he remained for about four years. About 12 years ago he went on the road as traveling salesman and had continued in that work with conspicuous success up to the time of his death. Mr. Weidmann's special field was in the Southwest, and he had been instrumental in securing some large contracts in the Texas oil fields.

O'Hara Brothers are fitting up a building on West Water street, Weir, Mass., for their plumbing business.

W. G. Backus & Sons, Pittsfield, Mass., have secured the contract for installing the plumbing work in the Burnham Industrial School at Canaan, N. Y.

S. E. Dibble, New Haven, Conn., will install the plumbing in the new house of A. W. Flint, to be erected in that city.

The Buckingham-Routh Company, New Haven, Conn., have the contract for installing the plumbing in the summer residence of Victor M. Tyler at Indian Neck, Conn.

P. J. Moran, Salt Lake City, Utah, bid $2400 and secured the contract from the Regents' University of Utah for plumbing and heating the new Physical Building.

Robert Scott, Philadelphia, Pa., will install a low pressure steam heating plant in the building of the Young Women's Boarding House Association, corner of Ninth and Pine streets, in that city, at a cost of about $1900.

The Mulford Heater Company, Galva, Ill., are sending out some new circulars in the interest of their Steam and Hot Water Boilers, calling attention to the fact that they are now using cast iron push nipple connections instead of asbestos gaskets. The circulars show the Boilers in such a manner that the fire and water travel can be readily understood. They are of the horizontal sectional type and are made in several sizes.

Cecil Graebe, Wheeling, W. Va., has the contract for plumbing St. Stephen's parsonage, in that city, and equipping it with a natural gas and illuminating gas lighting system.

Pierce & Cox of Boston, Mass., have completed the contract for installing a heating plant in the Town Hall at Warren, Mass.

The plumbers' strike at Seattle, Wash., has been settled.

The plumbers of Cedar Rapids, Iowa, have petitioned the City Council to create the office of plumbing inspector.

Francis J. Torrance of the Standard Mfg. Company, Pittsburgh, is being spoken of as a prospective Republican candidate for Governor of Pennsylvania.

Frank Davis, 404 Main street, Pawtucket, R. I., has been awarded the plumbing contract for the new W. W. Dunnell bleachery plant at Apponaug, R. I.

The Iowa Plumbing Company, Davenport, Iowa, have increased their capital stock from $5000 to $25,000.

The Reading Radiator Company, Reading, Pa., are building a 60 x 80 foot addition to their foundry. They are in the market for an apparatus for opening the ventilators at top of foundry that can be operated from the floor below.

The Jarecki Mfg. Company, Erie, Pa., are constantly shipping Steam Brass Work and Malleable Iron Fittings to London, England, and the Continent.

J. J. Ryan & Co., 68-74 West Monroe street, Chicago, brass founders and finishers and manufacturers of Plumbers' Brass Goods, report receiving contracts for Metal Trimmings for marble closets and urinal partitions and lavatory work for the following buildings: Auditorium Annex, Hoyt Building and Rookery Building, Chicago; Grand Opera House, Cincinnati; Peoria Hotel and Rock Island Depot, Peoria, Ill.

New Firms and Changes.

A letter from George W. Utton, Winsted, Conn., informs us that he has sold out the plumbing business which he has conducted in that place for the past 20 years to the new firm of Barrett & Kennedy, who will continue the business at the old stand. Both the members of the new firm have been associated with Mr. Utton for the past ten years.

The Spooner & Harris Company, 61 Worthington street, Springfield, Mass., inform us that a partnership has been formed between Myron B. Spooner and William A. Harris, both of Springfield, to manufacture and job Furnaces, Steam and Hot Water Heaters, Radiators, Steam, Water and Gas Supplies, Sheet Metals and Plumbing Specialties. Mr. Spooner is well known to the trade, having traveled for more than 13 years for the Boynton Furnace Company of New York. Mr. Harris has been engaged in the manufacturing business for more than 20 years, and was formerly secretary and manager of the Springfield Foundry Company and of the Baush & Harris Machine Tool Company of Brightwood. They desire to receive catalogues and quotations from manufacturers and dealers in goods in their line.

Donat Karle, Joseph Karle, William Adams, Charles Jorger, Henry Keelzer and J. A. Schultze of Detroit have filed articles of association of the Karle Company, Limited, for the purpose of conducting a plumbing business. The company are capitalized at $10,000, all but $1800 being in property.

A. Cuthbertson, formerly in the employ of J. C. Polson, has bought out his stock, and will carry on a plumbing and tinsmithing business at the old stand, 2 Division street, Holyoke, Mass.

The Water Heater Mfg. Company of Milwaukee, Wis., have increased their capital stock from $25,000 to $40,000.

The firm of McGuire & Horton, plumbers, at White Plains, N. Y., have been dissolved by mutual consent, Mr. Horton retiring.

The Gem City Plumbing & Heating Company have been incorporated at Dayton, Ohio, with a capital of $30,000, to conduct a plumbing and heating business.

The Gas Appliance Company of Baltimore, Md., have been incorporated, with a capital stock of $20,000, for the manufacture of Gas Appliances. Frank D. Moses of Trenton, N. J.; Harry W. Hunter, Edward Brady, William T. Porter and others are interested.

The New Hanover Plumbing Company have been incorporated at Wilmington, N. C., by Charles Elliot and A. Watkins, to do a general plumbing and tinning business. Their headquarters will be in the Smith Building on Princess street.

Walter H. Sewell, formerly in the employ of W. L. Snow, has opened a Plumbing, Furnace and Stove Repair shop at 59 Holland street, West Somerville, Mass.

The American Self-Heating Radiator Company, 529 Main street, East Orange, N. J., have been incorporated, with a capital of $125,000, by C. V. Childs, George T. Mills and H. N. Smith, to manufacture Radiators.

A. Malloy, for many years with the New Haven Steam Heating Company, is now associated with Lawrence Kling in the plumbing business, the firm being known as Kling & Malloy, New Haven, Conn.

The Seward Engineering Company, 89 Centre street, New York, who are well known to the heating trade, have been incorporated, with E. C. Seward as president; George H. Teft, secretary and treasurer, and J. H. Lee, superintendent. This company were established several years ago by Percival H. Seward, who has sold out his entire interest and severed his connection with the concern in order to become the manager of the New York office of the Model Heating Company.

The Durango Plumbing Company have been incorporated by Louis C. Jakway, Frank W. Stubbs and A. M. Jakway, with a capital of $10,000, at Denver, Col., to conduct a plumbing business.

The Detroit Ventilating Company, Limited, of Detroit, Mich., have filed amended articles of association, with a capital stock of $150,000, of which Albert Drouillard holds $40,000; Edmund I. Scully, $40,000; John M. Kay, $20,000, and Walter J. Scully, the chairman of the Board of Managers, $50,000.

J. C. Miller has opened a plumbing and tinsmithing shop at Caro, Mich. Mr. Miller is a regularly licensed plumber, and for several years has been in charge of the tin shop and plumbing department of the business of Lazelle Brothers.

W. H. Harroun and James Kenner, Jr., have entered into partnership and will conduct a plumbing business in the Jewell Building on Main street, Westfield, N. Y.

C. H. Avery, Nashua, N. H., advises us that the business of house furnishing, heating and plumbing heretofore conducted under his name has been incorporated and the firm will be known in future as the C. H. Avery Company. Hiram W. Brooks, George A. Davis and David Pinet, who have been with Mr. Avery many years, have been admitted to an interest in the concern. The business will be conducted as heretofore, with Hiram W. Brooks as manager of the plumbing and heating department.

B. L. Howard has purchased the stock of the Atlantic Stove & Plumbing Company at 94 Brewer street, Norfolk, Va.

Klentz & Busby are a new firm in the plumbing and heating business at 223 South Main street, Rockford, Ill., Paul Klentz, who has carried on a plumbing business for a number of years, having taken Mr. Busby into partnership with him.

George Scholl has opened a plumbing and tinsmithing shop at South Framingham, Mass.

The *Bulletin* of Williamsport, Pa., announces the incorporation of the Steel & Robinson Company, with a capital of $50,000, to manufacture Steam Radiators.

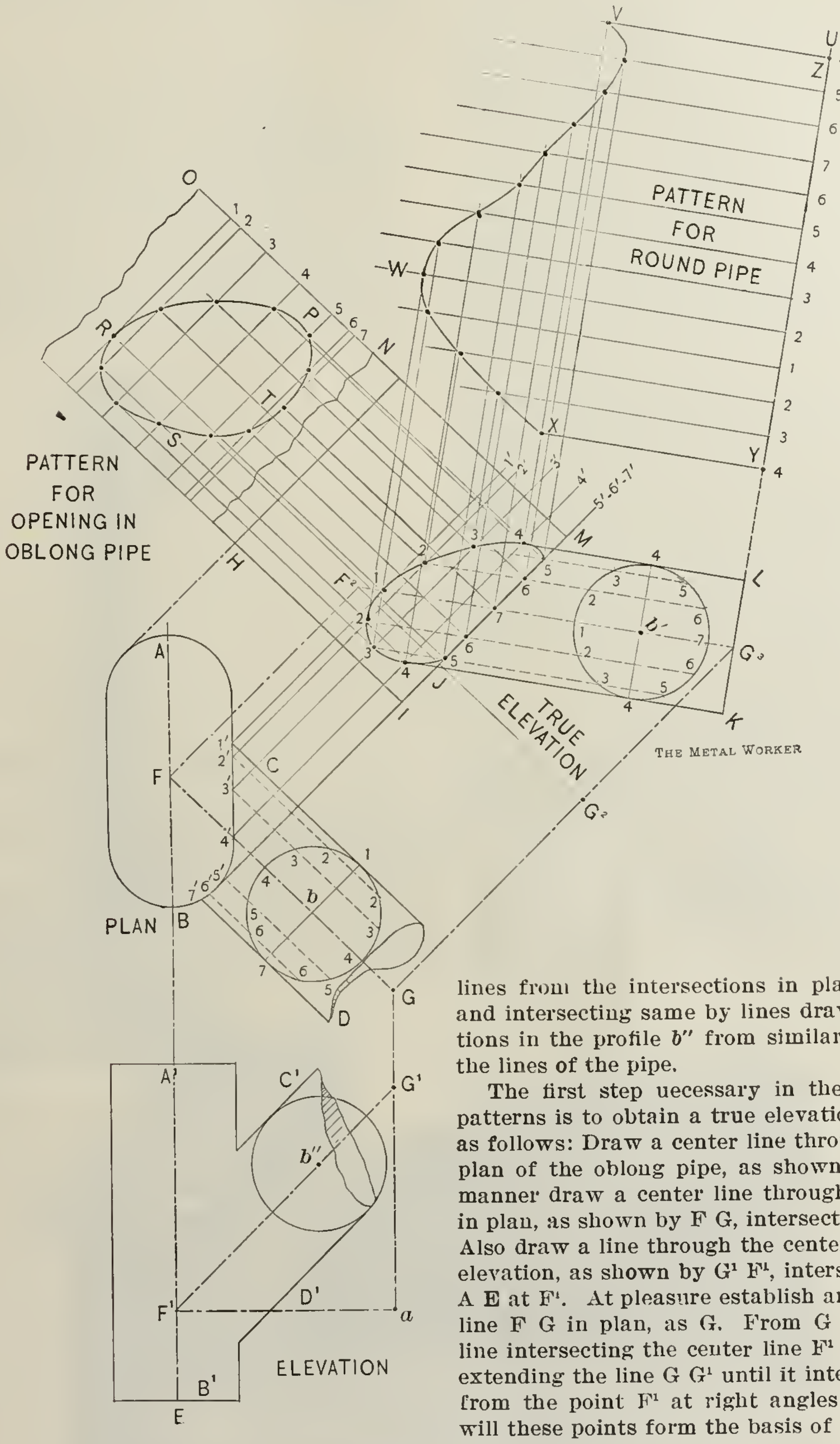
James Powers has sold out his plumbing stock and business and accepted a position as traveling salesman with the firm of Cooper & Cole, Hastings, Neb., wholesale dealers in Plumbing and Steam Supplies.

The Field & Shorb Company, Decatur, Ill., have been incorporated by William C. Field, William A. Shorb and W. T. Delahunty, with a capital of $15,000 to install heating and refrigerating plants.

Patterns for Intersecting Pipes.

A correspondent from New Haven, Conn., writes as follows:

"Will you kindly show me through the columns of *The Metal Worker* how I can lay out the patterns for a round smoke pipe that joins an upright pipe having flat sides and round ends, and is in position before it is necessary to connect the round pipe to it? The round pipe inclines to the vertical pipe at about 45 degrees, both vertically and horizontally. I am unable to find the true points of intersection between the two pipes. I have looked through 'The New Metal Worker Pattern Book' and through my files of *The Metal Worker* since 1892, and can find no example to help me. These files and the pattern book have been of great service to me and I have never been at sea on a problem before."



Patterns for Intersecting Pipes.—Plan Elevation, True Elevation and Patterns.

The reason our correspondent could not find the true points of intersections between the two pipes was because he did not construct a true elevation on the center line of the round pipe in plan. In the accompanying illustration the plan and elevation is a reproduction of our correspondent's sketch. A B in plan represents the oblong pipe, while C D shows the round pipe intersecting the oblong pipe at an angle of 45 degrees. A^1 B^1 shows the elevation of the oblong pipe intersected by the round pipe C^1 D^1, also at an angle of 45 degrees. The line of intersection in the elevation has been omitted, as it is not required in the development of the pattern. If the intersections were required for the purpose of making a finished drawing this could be done by dropping lines from the intersections in plan into the elevation, and intersecting same by lines drawn from the intersections in the profile b'' from similar numbers, parallel to the lines of the pipe.

The first step necessary in the development of the patterns is to obtain a true elevation, for which proceed as follows: Draw a center line through the elevation and plan of the oblong pipe, as shown by A E. In similar manner draw a center line through the round pipe C D in plan, as shown by F G, intersecting the line A E at F. Also draw a line through the center of the round pipe in elevation, as shown by G^1 F^1, intersecting the center line A E at F^1. At pleasure establish any point on the center line F G in plan, as G. From G drop a perpendicular line intersecting the center line F^1 G^1 in elevation at G^1, extending the line G G^1 until it intersects the line drawn from the point F^1 at right angles to A^1 E at *a*. Then will these points form the basis of measurements for obtaining the true elevation.

Now parallel to F G in plan draw the line F^2 G^2, equal in length to F G. At right angles to F^2 G^2 draw the line G^2 G^3, equal to *a* G^1 in elevation. Now draw a line from G^3 to F^2, which will represent the true length of the center line of the round pipe on F G in plan. At right angles to F^2 G^3 draw the line L K, equal to the diameter of the round pipe, and describe the circle *b'*, which divide into equal spaces, as shown. In similar manner describe the circle *b* in plan view, which divide into the same number of spaces, as shown from 1 to 7 to 1. Parallel to the lines of the pipe draw lines intersecting the oblong pipe at points 1' to 7'. Then at right angles to F G and from points 1' to 7' draw lines indefinitely, as shown, which intersect with lines drawn parallel to F^2

G^3 from similar numbered intersections in the circle b′, as shown by points in the miter line 1 to 7 to 1. Trace a line through points thus obtained, which will give the true points of intersections between the round and oblong pipes at an angle of 45 degrees, both vertically and horizontally.

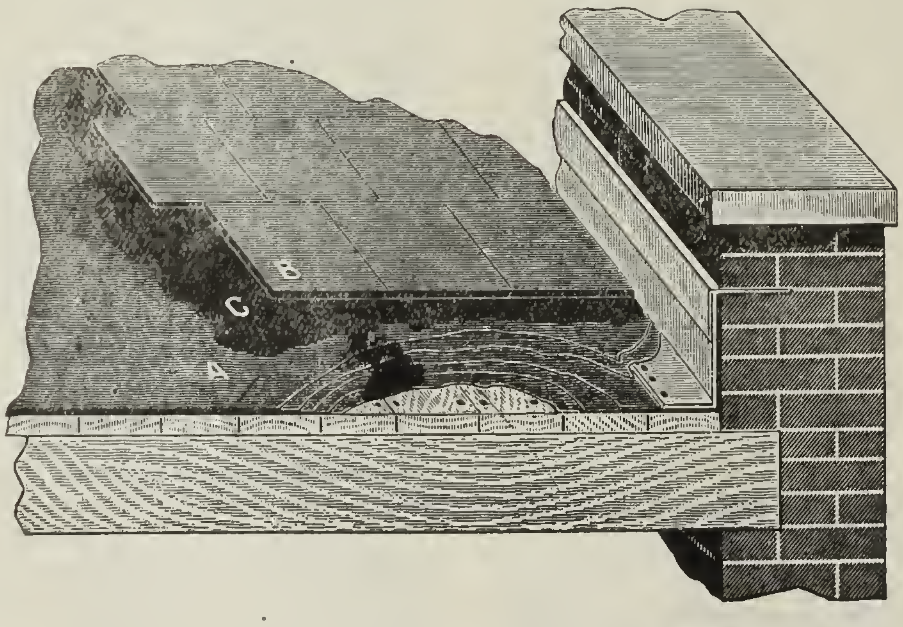
As confusion is apt to arise in numbering the points in circles b and b′ an explanation may not be out of place. Assume that 1 7 in plan of the circle b is a pivot, and the circle is turned so that one point 4 comes above and the other point 4 below, then for this reason should the points 4 and 4 in circle b′ come below and above respectively, as shown.

From the extreme point of the oblong in plan, as A, erect the line to the true elevation, as shown. Then will H I J K L M N be the true elevation of the round and oblong pipes. For the pattern for the opening to be cut into the oblong pipe extend the line M N, as shown by M O, upon which place the stretchout of the intersections on the oblong pipe in plan 1′ to 7′, as shown by the small figures 1 to 7 on N O. From these small figures and at right angles to O N draw lines, as shown, which intersect by lines drawn from similar numbered intersections in the miter line M F^2 J at right angles to M I. Trace a line through the points thus obtained, then will P R S T be the pattern shape for the opening in the oblong pipe.

For the pattern for the round pipe draw any line at right angles to J K, as Y U, upon which place the stretchout of the circle b′, as shown by 4 to 1 to 4 to 7 to 4 on Y U, thus bringing the seam on the line 4 L in true elevation. At right angles to Y U and from the small figures draw lines indefinitely, which intersect by lines drawn at right angles to M L in true elevation from similar numbers in the miter line M F^2 J. Trace a line through these points of intersections thus obtained in pattern, as shown by V W X. Then will V W X Y Z be the pattern for the round pipe.

Asphalt Roofing Tiles.

The Commonwealth Roofing Company, 100 William street, New York, are introducing their asphalt tiles for roofing, as here illustrated. What the company claim for this material is that it offers a new combination of accepted and standard materials, making possible a paved roof, light, strong, and flexible, made entirely of fire, water and frost proof bituminous substances. The sectional view of a roof herewith shows how the various features are combined. Letter A indicates layers of roofing felt cemented together, which is the same water proof base and binder as has been used for 40 years under slag, gravel, tile, and brick roofing. Letter B refers to the natural asphalt concrete tiles, another proved material in use for generations for street paving, walks, and floors. Letter C represents a thin layer of asphaltic cement of the same nature as both felt and tiles, used to bond the felt and tile and cause a perfect union. The tiles are 10 x 10 x ½ inches as supplied for roofing.

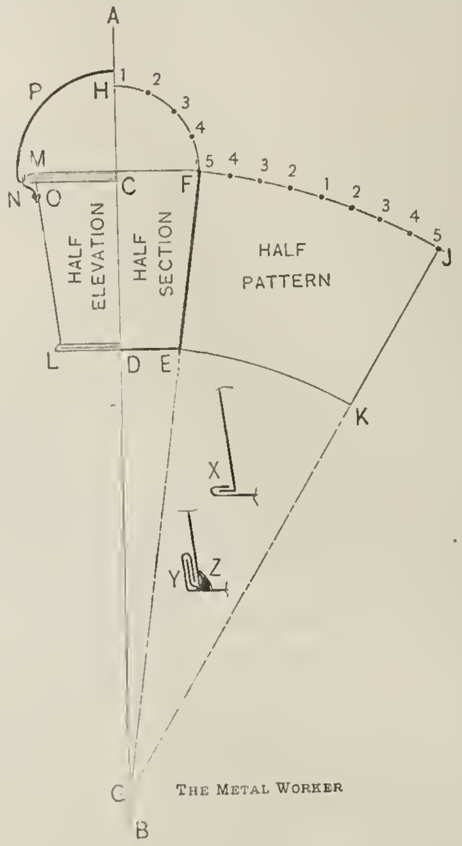


Asphalt Roofing Tiles.—Roof Section, Showing the Tiles and How Applied.

PATTERN FOR FLARING BUCKET.

Without Allowance for Laps.

Flaring buckets can be made of either black sheet iron and galvanized after they are made, which makes a tight seam and avoids any soldering; or they can be made of galvanized sheet iron or IX tin and soldered after being made.



Pattern for a Flaring Bucket.

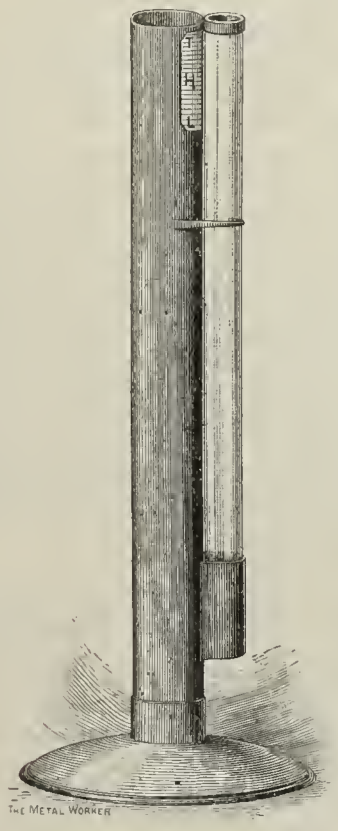
When developing the pattern for a flaring pail or bucket proceed as follows: In the accompanying illustration draw any line, as A B, upon which set off the hight of the bucket, as C D. From the points C and D, and at right angles to A B, draw the half diameters C F and D E respectively, as shown. Now draw a line from F to E, extending it until it meets the center line A B at G. With C as center and C F as radius describe the one-quarter plan C F H, which divide into equal spaces, as shown by the small figures 1 to 5. Now with G as center and radii equal to G E and G F draw the arcs

E K and F J. Then, starting at F on the arc F J, step off twice the number of the spaces contained in the quarter plan H C F, as shown by the small figures 5 to 1 to 5 on F J. From 5 draw a line to G, intersecting the arc E K at K. Then will F E K J be the half pattern of the bucket.

C D L M shows the half elevation of the bucket, in which M shows the wired edge, N the ear riveted to the bucket at O and P the wire handle. In double seaming the bottom to the body, X shows the first operation and Y the last operation, Z representing the soldering on the inner corner of the pail when made of tin or galvanized sheet iron.

Apparatus for Testing Solder.

Those who use solder are apt to experience some difficulty in getting just the quality of solder they desire. To overcome this trouble and to enable them to know just exactly what they are getting, F. C. Kuemmel of Bartlett, Hayward & Co., Baltimore, Md., is putting on the market the apparatus for testing solder, shown in the accompanying illustration. It consists of a metal tube with a glass gauge tube on the side. The glass tube is attached to the metal tube, which is supported at the bottom by a metal base. When complete the apparatus stands about 14 inches high. In using the tester the tube is filled with water to the indicator bar below the lettered gauge. The solder to be tested must be run into bars weighing exactly 1 pound and of a size that will readily go into the metal tube. If the solder is exactly half tin and half lead the water in the gauge will rise to the point marked H. If the solder contains more tin than lead the water will rise in the gauge toward the letter T in proportion to the amount of tin used in its composition, and if it contains more lead than tin the water in the gauge will rise above the letter L toward a point below the mark H, the hight varying according to the amount of lead the solder contains.



Apparatus for Testing Solder.

We are advised that the E. W. Bliss Company, Brooklyn, N. Y., have purchased the Coining Machinery and Press business of the Orr & Hess Machine Company of Philadelphia, who have been recognized as the leading manufacturers of this class of machinery, their Presses having been adopted by the United States Mint. The E. W. Bliss Company will now be in a position to supply the most approved machinery used in the manufacture of coins, medals, regalia and similar kinds of embossed work.

L. H. Solosth & Sons Stamping Works.

Referring to the illustration of stamped steel ceilings made by the L. H. Solosth & Sons Stamping Works, Grand Rapids, Mich., given in our last issue, the company advise us that all their ceilings are made of soft annealed steel, which, after stamping, is japanned. This is done so that if there should be any leakage the ceiling will not rust through. They use only the best white lead and linseed oil, in which sheets are dipped, and when dry enough they are put in a japanning oven and baked hard. The company advise us that they have the greatest call for the style of ceilings 2 feet square. They manufacture ceilings in various Rococo and Renaissance designs, and also make a fine line of coves, borders, moldings, cornices and wainscoting.

Waterbury Brass Company.

Waterbury Brass Company, under date of April 1, issue list of stock sizes of brass and copper sheet, rod, wire and tubing and German silver carried in stock at their New York house, 122-130 Centre street. This new warehouse, to which they removed a month or two since, as chronicled in our columns at the time, enables them to materially increase the stock formerly carried, and they are now carrying upward of 1,000,000 pounds of brass and copper in sheets, rod, wire and tubing. Their stock of brass sheet, wire and rod, brazed and seamless tubing is probably the most complete in the country. They also furnish braziers' copper and cold rolled and plain copper in various thicknesses. At the old store, 60 Centre street, they never carried their soldering coppers in stock, shipping them from factory. Now they are carrying a complete stock of straight pointed soldering coppers and roofers' coppers. The company advise us that the stock in their New York house is now complete, and that they can supply material in general demand promptly, shipping orders same day as received. The trade in the territory covered by this house will doubtless be glad to know of the comprehensive stock thus carried, as their wants are usually for material in this line that is required quickly.

FLASHINGS.

The Double Truss Cornice Brake Company of Buffalo, N. Y., have been incorporated with a capital stock of $75,000.

All the employees at the factories of the American Can Company in New York and Brooklyn went out on strike this week in protest against a " time card " system recently introduced by the company.

It is announced that the plant of the Jackson Iron & Tin Plate Company, Clarksburg, W. Va., will be completed and put in operation early in May.

The Tuscora Steel Company, Newcomerstown, Ohio, have started up three of the mills in their new Sheet plant. The fourth mill and galvanizing plant will be put in operation shortly. The Tuscora Steel Company were organized nearly a year ago with a capital stock of $200,000. Their product will be Black and Galvanized Sheets.

The Ferracute Machine Company, Bridgeton, N. J., are reported to have booked orders for special Presses for the British and Peruvian Governments.

The Kentucky Iron & Corrugating Company of Covington, Ky., incorporated with a capital stock of $25,000, are erecting a plant, 60 x 200 feet, equipped with the latest machinery and operated by electricity. The new plant is expected to be in operation this month. The incorporators of the company are J. C. Droege, Fred. Macke and J. H. Mersman.

Negotiations are reported to be under way between the Commercial Club of Worthington, Ind., and a company who propose to erect a Tin Plate and Sheet plant, employing about 500 hands, provided the town will raise a cash bonus of $60,000 and provide the necessary site.

The Niles Sheet Metal Lath Company of Niles, Ohio, have been incorporated with a capital stock of

$200,000, by Wade A. Taylor, C. S. Thomas, W. T. Holzbach, F. W. Stillwagon and John F. O'Dea, to erect a plant for the manufacture of Sheet Metal Lath. The works will be operated in conjunction with the Empire Iron & Steel Company, recently incorporated at the same place.

The Eller Steel Roofing Works, Canton, Ohio, have recently made shipments of their products to Cuba, the Bahama Islands and South Africa.

The New Orleans Roofing & Metal Works, New Orleans, La., have just finished the cornice work on the Nurses' Home at the Charity Hospital in that city. The firm are now busy with two other large contracts, one for erecting the copper cornice and ornamental copper bay windows on the new Macheca Building, on Canal street, on which they are also using their Tropical Composition Roofing. The second job is for the cornice and other metal work on the Tilton Memorial Building, erected for the Tulane University. They are doing a considerable amount of cornice and roofing work in other towns. The company manufacture a complete line of roofing material, and carry a stock of all sizes and gauges of Galvanized and Black Sheets.

The Follansbee Brothers Company, Pittsburgh, Pa., with branch offices in Chicago, Philadelphia and Louisville, are sending out a blotter for April 1 in which the monthly table is given upon the side of an umbrella stand containing a number of these useful articles and suggesting the season of showery days. A picture of a dueling scene gives point to the statement that "satisfaction" is felt by the users of the Follansbee Old Style Roofing Tin.

A blotter which is being distributed by George Callahan & Co., 218 Front street, New York, calls attention to Callahan's Elastic Paint Oil, which is claimed to be more durable than the best linseed for roofing purposes. The manufacturers state that this composition will not crack or peel, while it possesses other advantages which make it especially advantageous for use by roofers and builders.

The Huntington Tin & Planished Plate Company of Huntington, W. Va., have been incorporated with a capital stock of $50,000 to erect a rolling mill. B. W. Foster is president of the company; T. N. Boggis, vice-president; W. H. H. Holswade, secretary, and J. W. Valentine, treasurer.

John H. Roberts informs us that he has just started in business at West Homestead, Pa., to do Tin work, Spouting, Furnace work and general Sheet Metal work. He will also make a specialty of mill work. He desires to receive catalogues, price-lists and discount sheets from dealers in Tin Plate, Sheet Metal and Tinners' Supplies, also from manufacturers of Hot Air Furnaces and Furnace Fittings.

A lodge of the Amalgamated Association has been established among the employees of the Parkersburg Iron, Sheet & Steel Company, at Parkersburg, W. Va.

William Gimbert announces, under date of April 1, that he has sold his Slate Roofing business and good will to the G. F. Hogen Company, who will carry it on at the old location, 15 Craw avenue, Cleveland, Ohio. The company announce that they are prepared to make estimates upon Slate Roofing, Structural Slate and Electrical Slate.

E. W. Bliss, president of the E. W. Bliss Company of Brooklyn, N. Y., sailed on Tuesday by the "Kronprinz Wilhelm" for a two months' holiday in Europe.

The Juniata Steel & Iron Company, Greencastle, Ind., have broken ground for the erection of their new Tin Plate plant.

The American Tin Plate Company will install at the Monongahela Works, on the South Side, Pittsburgh, the continuous process for the manufacture of Tin Plate.

The three independent Sheet mills which recently bought the Burgess Works of the Crucible Steel Company of America at Portsmouth, Ohio, have organized under the name of Portsmouth Steel Company, who have been chartered under the laws of West Virginia with a capital of $300,000. Among the directors of the new concern are A. F. Baumgarten of the Maryland Sheet Steel Company of Cumberland, Md.; N. E. Whitaker of the Whitaker Iron Works of Wheeling, W. Va., and W. L. Glessner of the Laughlin Nail Company, at Martin's Ferry, Ohio.

The report that the new Sheet mill of the Parkersburg Iron & Steel Company, Parkersburg, W. Va., had been greatly damaged by a storm is incorrect. The only damage done was the blowing down of some columns being erected for the new bar mill building. The offices of the Parkersburg Iron & Steel Company have been removed from room 408, Times Building, to the mills at Parkersburg, W. Va.

The report that the cold roll and pickling equipments of the plant of the Sharon Tin Plate Company, Sharon, Pa., had been closed down on account of a strike among the men is not true.

Work is being pushed rapidly on the new Tin Plate plant being built by the Griffiths Charcoal Iron Mill, Washington, Pa. The hot mills, together with the tinning department, are practically completed. By reason of the damage done by a storm the forge and bar mill building will be delayed three or four weeks longer than contemplated. The knobbling fires are about finished and the firm have already commenced to burn charcoal for the same three miles outside of Washington, and fully expect to be manufacturing Tin Plate from charcoal by May 15 or not later than June 1 next.

N. & G. Taylor Company, manufacturers of Tin and Terne Plate and dealers in Sheets, Solder, &c., have removed their New York offices to room 1109, Townsend Building, Broadway and Twenty-fifth street.

Ambrose Beard, who has been division superintendent of the American Sheet Steel Company at Muncie, Ind., has been promoted to the more important district of the Dover works, embracing the Reeves works, Canal Dover, Ohio, and also the works at New Philadelphia, Dennison, Dresden and Canton, Ohio. He will continue to act in an advisory capacity for the Midland works and the Piqua, Ohio, works and will receive the assistance of another division superintendent, whose name will soon be announced.

Ceylon Plumbago Advancing.

In 1899 an interesting movement took place in the market for plumbago in Ceylon, which is the principal source of supply of the graphite industry of this country. There was a very sharp advance. The natives, who are alone able to conduct mining operations in the unhealthy regions of Ceylon, where the mineral is found, made so much money on the advance that production instead of being stimulated was lessened. During the years 1899, 1900 and 1901 the market fluctuated, occasional declines being followed by sharp rallies, thus keeping buyers and crucible makers in particular in a constant condition of uncertainty. Now, however, a sharp upward movement has again taken place. During the last four or five weeks there has been a rise of 35 to 40 per cent. above the figures which ruled two months ago. These prices concern chiefly good stock for the making of crucibles for brass and steel melting. There are reports of scarcity of supplies, and intimations are sent out that the miners have combined and are restricting the output. However that may be, the fact remains that prices are again seriously high.

The March returns of incorporations of large companies in New Jersey, Delaware, Maine and New York having a capital of $1,000,000 and over show a considerable decrease in capitalization as compared with February, the total declining to $158,150,000 from $294,850,000. In January the figures were $146,950,000. The largest concern incorporated last month was the International Nickel Company, with a capital of $24,000,000.

The property losses from floods in the State of Tennessee last week, according to conservative estimates, aggregated $5,250,000, and 25 lives were lost.

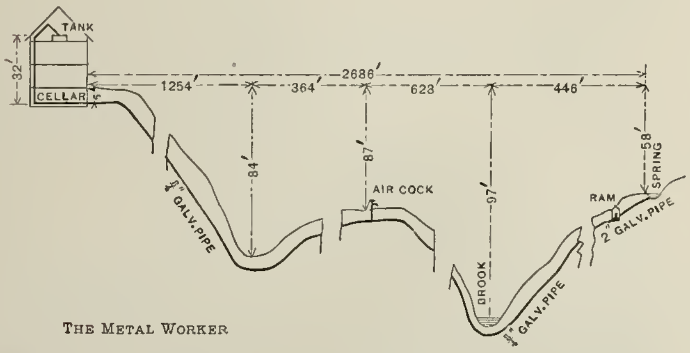
THE LETTER BOX.

Inquiries in regard to practical questions of general interest are invited, in reply to which we shall be glad to receive suggestions and information from our readers.

Correspondents are requested in all cases to give their names and addresses, which will not, however, be published or disclosed without their consent.

WANTS AN AUTOMATIC VALVE.

From G. S. D., Sunnyside, P. E. I.—A customer of ours wants us to install a hydraulic ram to supply water to his house and barn from a spring, which is over ½ mile from the house, and the pipe will have to go over a hill between the house and the spring, as shown in the sketch. I would like to find out if there is an automatic air valve made that can be placed on the service pipe at the point shown in the sketch, that will release the air without any further attention, and where it can be bought. It is over ¼ mile from the house to the hill where this valve is wanted, and if it should be necessary to go to the valve once a day, or even once in every two days, to let the air off, particularly in winter weather, it would be quite a bother. In the letter of "T. P." in *The Metal Worker* of February 8 he speaks of a small hydrant, but he does not say whether or not it is automatic. From this sketch it will be seen where it is proposed to locate a No. 5 ram, and how the pipes are to be run, and the size that we intend to use. The spring is 2686 feet from the house, and 440 feet from the spring there is a small brook that can be quite easily crossed. The tank is 84 feet above the level of the spring. You will say that it would be better to put in a larger pipe than the ¾-inch discharge pipe which we intend to use, but our customer has this pipe in stock and would like to work it in, if possible. Any information which you or your experienced readers on ram work can give us will be appreciated.



Wants an Automatic Valve.

Note.—There can be no doubt that the use of a larger discharge pipe would enable the ram to do its work more readily. We know of no such valve as mentioned, but should any of our readers be informed of anything that will answer the purpose we shall be glad to bring it to the attention of this correspondent. If instead of bringing the air vent to the surface of the ground it is placed in a covered pit, so that the frost will not so readily affect it, a cylinder may be connected at the top of the pipe, capable of holding about 2 gallons or more. Should any air collect in the discharge pipe or the branch to the cylinder it can pass up and escape to the air cylinder, so that there will be no occasion to empty the cylinder for several weeks. There should be a small stop cock at the top of the cylinder to allow the air to escape when a sufficient quantity has accumulated to affect the operation of the ram.

WHAT MAKES THE TORCH BLOW?

From B. McK., Augusta, Ky.—Answering the query of "Curiosity" in *The Metal Worker* of April 5, I am of the opinion that the blowing and overflow of the torch is caused by an accumulation of gas generated from the heat in the wick tube in the narrow case or torch. This does not occur in the old flaring torch, for the reason that it allows sufficient alcohol around the wick to keep it cool, thus preventing the generation of gas. If "Curiosity" will make his torch an inch larger in diameter he will find that his difficulty will be overcome.

WANTS COPPER COLORED SOLDER.

From W. C., New Haven, Conn.—I should like to know if there is any way of soldering copper without showing the solder.

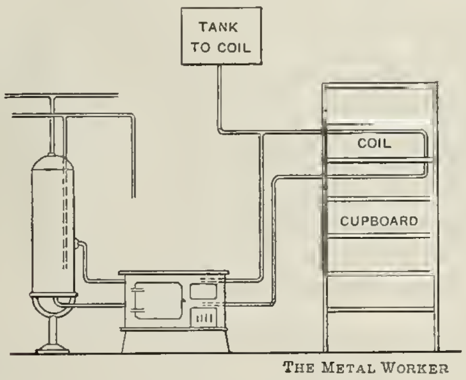
Answer.—In previous issues of *The Metal Worker* we have described a method for giving solder a copper color, and now reprint it for the benefit of our correspondent, as follows:

Prepare a saturated solution of the sulphate of copper in water, using for the purpose a glass or earthen dish. Apply some of this solution on the end of a stick or brush to the solder, when, on touching it with an iron or steel wire, the solder will become covered with a fine coating of copper. By repeating the operation the deposit will become thicker and darker. By this means a fairly substantial coating of copper may be produced, so that the soldered seams of copper work will have about the same color as the copper, and will show very little. If, on trial, the coating is not satisfactory, the solution is not strong enough, and can be strengthened by adding a little more of the sulphate of copper, or powdered blue vitriol, as it is sometimes called.

HEATING A COIL FROM A WATER BACK.

From W. H. C., Manitou, Col.—How can I heat a cupboard successsfully without steam gathering in the pipe and boiling in the tank when all the fixtures are placed as shown in the sketch herewith? The boiler is heated by means of a water back in the range in the usual manner. The tank which supplies water to the coil in the cupboard, as now arranged, boils over. Could the coil in the cupboard be attached to the supply pipe which furnishes hot water to the house, and where would be the place for the connection?

Answer.—There is no occasion to use an expansion tank in connection with the heating coil, if connected with the regular piping. It will only be necessary to carry a branch from the hot water service pipe at the top to the boiler over the coil and connect at the highest point; then, whenever there is hot water in the boiler, it will circulate through the coil in the cupboard.



Heating a Coil from a Water Back.

HEATING BATHROOM FROM WATER BACK.

From O. A., Groton, N. Y.—I should like to know if I would be likely to have trouble in heating a bathroom on the second floor from a 60-gallon hot water boiler connected with the kitchen stove? The bathroom is directly over the kitchen and is 8 x 9 feet in size. I propose to put a coil of 1-inch pipe connected with the return bends on the side wall, using 1-inch pipes for connecting the boiler with the coil. I shall put valves on the pipes to the coil in the bathroom, to shut it off in warm weather. Will it be necessary to put in an expansion tank? I have seen jobs that did not have an expansion tank. Would it be necessary to use expansion joints?

Note.—Two chapters in the book entitled "Kitchen Boiler Connections," which can be furnished by our

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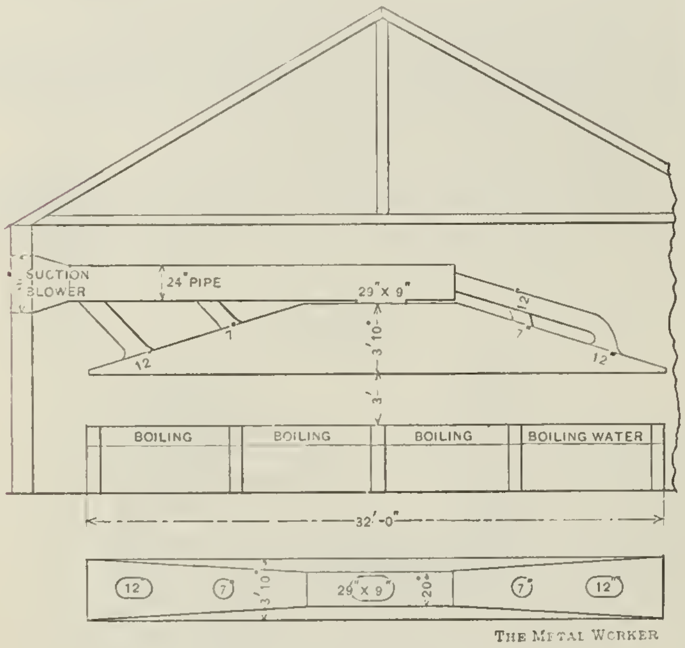
Book Department, are devoted to this subject. The whole question to be decided is whether or not the water back in the stove has the capacity for heating the additional quantity of water required for warming the bathroom in cold weather. If it has, it is only necessary to determine the size of the coil required for heating the bathroom and to connect it with 1-inch pipes, as described. It will be necessary to place an air valve at the highest point in the heating coil in the bathroom, so as to allow the air to escape, which would otherwise accumulate and stop the circulation. As the temperature of water in the boiler will vary it will be desirable to provide 1 square foot of heating surface in the coil for every 25 cubic feet of space in the bathroom. Connected with the boiler in this way, neither an expansion tank nor expansion joints will be necessary.

REMOVING STEAM BY FAN.

From J. W. N., Arlington, N. J.—Will *The Metal Worker* kindly inform me if there is a better way to get rid of steam from hot water sinks than that shown in the plan and elevation given herewith? I have a 36-inch suction fan, running with 640 revolutions per minute. The pipe leading from the fan to the hood tapers from 36 to 24 inches, and the hood is connected with the pipe in several places, as shown.

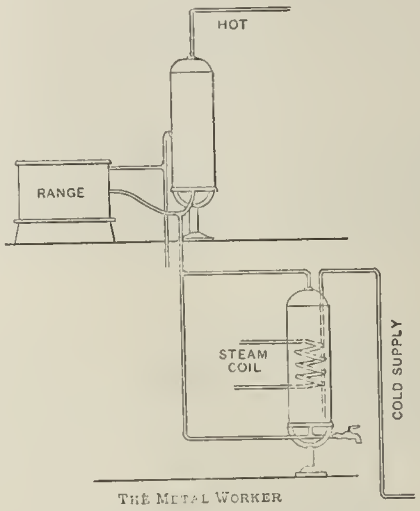
Answer.—The general design of this ventilating apparatus appears to be correct. The area of the pipe connections with the hood, however, is too large for an even distribution of the draft, their whole area being 534 inches, while the 24-inch pipe has an area of but 452 inches. The 12-inch pipe nearest to the fan will have a powerful draft and the 12-inch pipe at the other end a weak draft. We would suggest that the pipe nearest to the fan connection be made 8 inches in diameter and the central opening 29 x 7 inches, with all the rest of the openings the same size as shown in the plan.



Removing Steam by Fan.

A PROBLEM IN BOILER CONNECTIONS.

From H. F. S., Merrill, Wis.—In reply to the letter of "B. H. C.," in *The Metal Worker* of March 1, I would say that I have connected two boilers as shown by the accompanying sketch, and they work very satisfactorily. The difference between my job and his is that in my case the upper boiler was heated from a range while the lower boiler was heated by the steam coil. But this would make no difference, as they work either way as connected. I cut off the cold water supply from the upper boiler and attached it to the lower one. I then took a pipe from the bottom of the upper boiler and carried it to the bottom of the lower boiler, and ran a pipe up from the top of the lower boiler to the side connection in the upper boiler. This gives all the hottest water to the upper boiler, and when hot water is drawn for bath or other purposes it does not disturb the temperature of the water in the upper boiler by letting the cold water in, as the cold water feeds directly to the lower boiler, and when water is drawn the hottest water in the lower boiler passes to the upper one. If the lower boiler is the only one heated, the hottest water will still go to the upper boiler. If the upper boiler is heated by the range and there is no steam flowing into the coil in the lower boiler it will work the same as if only one boiler was connected. The connection suggested by "I. H. S.," in *The Metal Worker* of March 8, may work all right, but if a strong fire was run at both boilers it might raise steam, which would rise to the top of the hot water service pipe of the upper boiler and cut off circulation in the upper boiler.



A Problem in Boiler Connections.

New Publications.

Municipal Engineering and Sanitation. By M. N. Baker, Ph.B., Associate Editor *Engineering News*. Publishers, the Macmillan Company, New York, 1902. Price, $1.25.

Mr. Baker's work belongs to that class of books on technical subjects which it is a pleasure to read. It is intended as a review of the whole field of municipal engineering and sanitation, and not as an exhaustive study of the subject. It is divided into five sections: Ways and Means of Communication, Municipal Supplies, Collection and Disposal of Wastes, Protection of Life, Health and Property and Administration, Finance and Public Policy.

This book, which contains 309 pages and a comprehensive index, is thoroughly readable all through. It contains a great deal of valuable information, and discusses municipal questions and engineering problems in a way which will appeal to the "man in the street," and the more he is in the street probably the better he will appreciate the book.

Brass Founders' Alloys. By John F. Buchanan. Publishers, Spon & Chamberlain, New York, 1901. Price $2.

Mr. Buchanan, who is a practical brass founder, gives us in his book of 129 pages an introduction, six chapters and a comprehensive index. He writes in a very practical style as a man who knows whereof he speaks, yet relieves the monotony which such a book is apt to have by lighter touches here and there. He endeavors to present the practical features of the manufacturing of alloys on a commercial basis.

Plans are under way for the erection in Pittsburgh of a Temple of Labor, to be built and owned by the different labor organizations of the city. The building, as planned, will be a six-story structure containing a large auditorium, a number of meeting rooms and offices for the business agencies and officers of the various unions. About 20 labor organizations are interested in the scheme.

TRADE REPORT.

MARKET SUMMARY.

Pig Tin is quiet and about 1c. higher.

Copper is dull and rather weak.

Pig Lead remains quiet and without change.

Spelter is firm and slightly higher, but dull.

Antimony is unchanged.

Nickel is active at former price.

Aluminum is active and unchanged.

Tin Plates are quiet and prices firm.

Sheets continue in active demand, with heavy gauges scarce; prices are strong.

Foundry Iron is higher for spot and very scarce.

Sheet Copper is in good demand and firm.

Sheet Zinc is without change.

Scrap Iron rules lower in price, with less demand.

Scrap Brass and Copper are about ½c. lower.

Hardware shows much activity, with steady prices.

Plumbers' Supplies are moving in good volume; prices are generally higher.

Cast Iron Sinks have been advanced 10 per cent.

Plumbers' Brass Goods are likely to advance shortly.

Solder is ½c. a lb. higher.

Maslin Kettles are somewhat higher.

Wire Nails are very firm, with scarcity of some sizes.

Cut Nails are also firm at advance of 5c. a keg; stocks are broken.

White Lead is quiet, with prices steady.

Linseed Oil is firm and slightly higher, with fair demand.

Spirits Turpentine is dull and about 5c. a gallon lower.

Scrap Rubber is weak and dull.

METAL MARKET.

New York, April 11, 1902.

Pig Tin.—The London "bull" movement started about ten days ago assumed larger proportions during the present week. On Monday London prices shot sharply upward, and the higher level was held until Thursday, when the price fell off somewhat. The excuse given for the London advance was the rumor that the Dutch Government would reduce the quantity of Banca Tin to be disposed of at their bi-monthly sales. This report, however, was discredited in well informed circles, and was given an emphatic denial at the New York Metal Exchange. The volume of business here has been light, buyers showing little interest in the market. Jobbers' prices rule about 1c. a lb. higher than those obtaining at the date of our last report. Straits Pig, in small lots, is now quoted at 28½c. to 28¾c. per lb.

Copper.—The situation in the Copper market is decidedly dull. The demand is of very ordinary type, and prices show an easy and even weak tendency. While spot quotations are unchanged, it is said that some low prices have been made on future deliveries. Consumers, however, show but little interest in the market, and are buying scarcely anything beyond the limit of their current needs, being convinced that they will not be called upon to pay higher prices than those now ruling for their future supplies. Speculation in Copper is entirely absent. Retail prices are without change. Lake Ingot, in small lots, is quoted at about 13¼c. to 13¾c., and Casting Copper 13c. to 13¼c.

Sheet Copper.—The demand for Sheet Copper is about of the usual proportions. The mills are said to be busy and to find a market for all the product they can turn out. Consumers, meanwhile, are placing orders mainly for the supply of their present requirements. Prices are firm on the basis of 18c. per lb. from store.

Pig Lead.—No change is to be reported in this deparment. Prices remain the same and the market is dull and uninteresting, though firm. American Pig in small lots is quoted at 4.45c. to 4½c. per lb. St. Louis advices report a good volume of demand for Pig Lead in that market. Prices are unchanged.

Spelter.—This metal continues strong and is a shade higher than a week ago. The volume of business, however, shows very little improvement. Jobbers quote good Western brands in small lots at 4.60c. to 4.70c. per lb. St. Louis advices report that the improved conditions in the Spelter market noted last week continue and business is on a more active and broader scale, with prices ruling somewhat higher.

Sheet Zinc.—The demand for Sheet Zinc is of fair proportions. Prices are unchanged at 6¾c. per lb. for 600-lb. lots and 7c. to 7¼c. for smaller quantities.

Antimony—Is unchanged. Hallett's in small parcels is quoted at 8⅝c. to 8¾c. per lb.; U. S., 8⅜c. to 8½c., and Cookson's at 10¼c. to 10¾c.

Nickel.—The situation in regard to this metal is unchanged. Small lots are quoted at 55c. per lb.

Aluminum.—Demand continues good and prices unchanged from their former level. Small lots of No. 1 Ingot, guaranteed 99 per cent. pure, are quoted at 37c. per lb., and 100-lb. lots at 35c.

Tin Plates.—The market is entirely unchanged and presents a quiet appearance. Dealers report a light volume of business, both in wholesale and retail way. The unsettled weather of the past week probably accounts for the falling off in orders from the small local consumers. Prices, meanwhile, are firm. American Bessemer Coke Plates, IC, 14 x 20, in small lots, are quoted at about $4.85 to $4.95 per box at New York and corresponding points. The American Tin Plate Company are booking contracts for deliveries up to the end of the third quarter of the year at existing prices. The competition of independent mills does not seem to have affected the market to any appreciable degree up to the present time, although it is possible that when the outside Tin Plate mills now building get into working order some evidence of competition may develop. Meanwhile, there is no sign of a superabundance of Plates. Available stocks, while of fair size and assortment, are by no means heavy, and in some cases are difficult to obtain for immediate delivery, except in very small quantities.

Sheets.—The demand for both Black and Galvanized Sheets continues heavy. Most of the mills are pretty well filled up with orders for the first half of the year. A great deal of business is offering for long future deliveries, but it is said that the independent Sheet manufacturers are not especially anxious to book such orders at present prices. Retail prices here are firm and unchanged. Jobbers quote No. 27 One Pass Cold Rolled Soft Steel Sheets at 3.85c. to 3.90c., and Galvanized Sheets at 70 to 70 and 2½ per cent. off the list.

Chicago advices are as follows: Manufacturers' agents report a good trade, which evidently is in line with conditions in other parts of the country, as the mills are becoming stiffer in their views as to prices. Some mills can make delivery of light Black Sheets in 30 days, but most of them are unable to do as well. Heavy Sheets are scarce, and very few mills are able to promise deliveries for several months. Jobbers quote small lots at 3.35c. to 3.45c. for No. 27 Black, and 70 and 5 for Galvanized.

Old Metals.—Supplies of Scrap Iron are becoming heavier and the demand has fallen off. Prices are not as firm as they have been and rule rather lower for some lines of Scrap. A fair demand exists for Old Metals of other descriptions. Scrap Brass and Copper quotations rule rather lower. Dealers are paying about the following rates for moderate sized lots, delivered at New York or corresponding points:

Heavy Copper	per lb. 10 c.
Light and Tinned Copper	per lb. 8¾c.
Heavy Brass	per lb. 8 c.
Light Brass	per lb. 6½c.
Lead	per lb. 3¾c.
Tea Lead	per lb. 3⅜c.
Zinc	per lb. 3 c.
Pure Aluminum Sheet	per lb. 25 c.
Cast Aluminum	per lb. 20 c.
No. 1 Pewter	per lb. 16½c.
No. 2 Pewter	per lb. 9 c.
Tin Plate Scrap, per gross ton	.... to $5.00
Wrought Iron Scrap, per gross ton	$13.00 to 13.50
Heavy Cast Scrap, per gross ton	12.00 to 12.50
Stove Plate Scrap, per gross ton	9.00 to 9.50
Burnt Iron, per gross ton	7.00 to 7.50

THE PIG IRON MARKET.

New York.—The scarcity of prompt Pig Iron continues and the market is very firm. We quote for forward delivery, Northern Irons: No. 1, $19.50 to $19.75; No. 2 X, $18.50 to $18.75; No. 2 Plain, $18 to $18.25, at tidewater. Tennessee and Alabama brands are as follows: No. 1 Foundry, $16.75, the official quotation, to $18; No. 2 Foundry, $15.75, the official quotation, to $17; No. 1 Soft, $16.75 to $18; No. 2 Soft, $16.25 to $17: No. 3 Foundry, $15.50 to $16.50; No. 4 Foundry, $15 to $16.

Chicago.—A considerable tonnage of Pig Iron has been sold during the past week, but the transactions have been in lots of under 1000 tons, and consisted mainly of small lots for early delivery. The furnace companies have largely sold their entire output for the remainder of the year, and in some cases running into the first quarter of next year. A few furnaces here and there, which have recently gone into blast, are profiting by the sharp demand for spot Iron, and are securing high prices for all they are able to offer. The leading Southern companies have not changed their schedule price of $12, Birmingham, for No. 2 Foundry; consequently this rate is continued in our quotations, although most of the Southern Iron sold brings $1.50 to $2 more. We quote as follows:

Lake Superior Charcoal	$21.50 to $22.25
Local Coke Foundry, No. 1	19.00 to 19.50
Local Coke Foundry, No. 2	18.50 to 19.00
Local Coke Foundry, No. 3	18.00 to 18.50
Local Scotch, No. 1	19.00 to 19.50
Ohio Strong Softeners, No. 1	20.10 to 20.35
Southern Silvery, according to Silicon	16.90 to 19.15
Southern Coke, No. 1	16.40 to 18.65
Southern Coke, No. 2	15.65 to 18.15
Southern Coke, No. 3	15.15 to 17.65
Southern Coke, No. 1 Soft	16.40 to 18.65
Southern Coke, No. 2 Soft	15.65 to 18.15

Philadelphia.—The exceptional conditions noted in our last report are still in evidence and are more strongly defined than ever. The scarcity of Pig Iron for early delivery is causing a great deal of anxiety, and many mills and foundries are suffering inconvenience in consequence. Unfortunately there is no prospect of better service in the near future. Everything that can be made available for shipment during the next 90 days is promptly taken at whatever price may be asked. Prices are hard to quote, but No. 2 X Foundry averages about $20 for deliveries up to July. As near as can be given, the present prices are about as follows for Philadelphia and nearby points:

	Deliveries to July.	Deliveries July to December.
No. 1 X Foundry	$20.50 to $21.50	$20.00 to $21.00
No. 2 X Foundry	19.75 to 20.50	18.50 to 19.00
No. 2. Plain	18.75 to 19.00	17.50 to 18.00

Pittsburgh.—The sale of 200,000 tons of Standard Bessemer Pig Iron to the United States Steel Corporation at $16.50, at furnace, for delivery in the last quarter of the present year and the first quarter of next year, has pretty well cleaned up all the available Iron. There is practically a famine in Pig Iron, and it is pretty well established that the market will not be much lower this year, but may, on the other hand, go considerably higher. There is a heavy demand for Foundry Iron, consumers buying for delivery clear into next year. We quote No. 2 Foundry Iron at $19.50 to $20, f.o.b. Pittsburgh.

Cincinnati.—The situation in the Pig Iron market shows no change. There is practically no spot delivery of Southern Iron in sight. Although the $12 limit on No. 2 Southern Iron is said to be held by the producers, some contracts are being made for amounts from 200 to 1000 tons on the basis of $13.50 to $15, Birmingham, and this for delivery for the last quarter of the year. We quote as follows, f.o.b. Cincinnati:

Southern Coke, No. 1	$16.75 to $17.75
Southern Coke, No. 2	16.25 to 17.25
Southern Coke, No. 3	15.75 to 16.75
Southern Coke, No. 4	15.25 to 16.25
Southern Coke, No. 1 Soft	16.75 to 17.75
Southern Coke, No. 2 Soft	16.25 to 17.25
Southern Coke, Gray Forge	15.25 to 16.25
Southern Coke, Mottled	15.75 to 16.75
Ohio Silvery, No. 1	20.60 to 21.10
Ohio Silvery, No. 2	20.10 to 20.60
Lake Superior Coke, No. 1	19.85 to 20.35
Lake Superior Coke, No. 2	19.35 to 19.85
Lake Superior Coke, No. 3	18.85 to 19.35

St. Louis.—The volume of business in the Pig Iron market in the past week has been on a limited scale. Prices are very variable and quotations, f.o.b. St. Louis, from $17.25 and higher for No. 2 Foundry, and $18 and upward for No. 1, but for the most part these are for small lots. We quote for cash, f.o.b. St. Louis, as follows:

Southern, No. 1 Foundry	$16.00 to $18.00
Southern, No. 2 Foundry	15.25 to 17.25
Southern, No. 3 Foundry	14.75 to 16.75
Southern, No. 4 Foundry	14.25 to 16.25
No. 1 Soft	15.75 to 17.75
No. 2 Soft	15.25 to 17.25

CHICAGO REPORT.

Scrap Iron and Steel.—Market is quiet on the whole. Consumers are not as active as a week ago, but stock is coming in freely. We quote dealers' buying prices for carload lots, Chicago delivery, as follows:

	Pet net ton.
Country Wrought Scrap	$14.00 to $14.50
Machinery Cast	.... to 13.00
Malleable Cast	12.00 to 12.50
Stove Plate (free from burnt)	10.00 to 10.50
Burnt Iron and Grate Bars	8.00 to 9.00
Sheet Iron and Hoops	8.00 to 9.00
Plow Steel	12.00 to 13.00
Breaking Stock	.... to 11.00
Old Boilers—whole (Iron)	9.50 to 10.00
Old Boilers (Iron) cut in single Sheets and Rings	12.00 to 12.50
Old Gas Pipes and Boiler Tubes	12.00 to 12.50
Cast Borings	7.00 to 8.00
Turnings	11.50 to 12.00
Horseshoes	14.00 to 14.50

Old Metals.—The demand is not very active, and consumers are loaded up in excess of immediate wants. Dealers quote buying prices on small lots as follows:

	Per lb.
Copper Wire and Heavy	11 c.
Copper Bottoms	10 c.
Copper Clips	11 c.
Red Brass	11 c.
Yellow Brass	8¼c.
Red Brass Borings	10 c.
Yellow Brass Borings	7¼c.
Light Brass	6½c.
Pipe Lead	3.60c.
Tea Lead	3.25c.
Zinc	2.75c.
Tin Foil	18 c.
Pewter, No. 1	15 c.
Pewter, No. 2	10 c.
Aluminum	20 c.

Old Rubber.—There is no change in conditions reported last week, and prices are unchanged. Dealers' buying prices are as follows:

	Per net ton.	Per lb.
Garden Hose	$25.00	.....
Air Brake Hose	42.50	.....
Rubber Shoes	....	6¾c.
Rubber Car Springs	....	5 c.
Inside Bicycle Tubing	....	22 c.
Outside Tubing	....	6⅛c.
Black Rubber	....	4 c.
White Rubber	....	8¼c.

Rags.—Rags are offered in large quantities, but little demand exists. Good Country Mixed Rags, Chicago delivery, 70c. to 75c. per 100 lbs. in any quantity.

Anthracite Coal.—The demand is very good, as prices will be absolutely maintained. Prices are as follows. A discount of 50c. is allowed on the following schedule for all coal shipped in April:

	Grate.	Egg and Stove.
Chicago	$5.75	$6.00
Milwaukee, Wis	5.75	6.00
St. Louis	6.20	6.45
Kansas City, Mo	8.25	8.50

The dry kiln of the Hurd Refrigerator Works, at New Duluth, Minn., was recently destroyed by fire, doing damage to the extent of $3000, which is covered by insurance. The kiln will be immediately rebuilt, the greater loss being in the valuable lumber used in the construction of the company's high grade Refrigerators.

THE HARDWARE TRADE.

The volume of trade throughout the country is large and of exceptionally satisfactory character, manufacturers alluding to it as heavy and all they can take care of. The requirements at present from the Central West are, perhaps, greater in proportion than from the other sections. Manufacturers generally are busy, some of them working on orders taken last fall, parts of which are still unexecuted. One leading concern in a New England manufacturing center are operating an important department double turn for the first time in their history. Considerable interest in the consolidation of hardware jobbers is being manifested, and there is much inquiry as to the facts concerning this important trade development about being consummated. Some producers report a temporary slackening of orders during the past week or two, which is partially attributed to the consolidation referred to. Merchants about to enter into radically new relations in the conduct of their business would naturally be conservative in placing orders for goods other than for immediate wants. The market is steady in matter of prices and an upward tendency is noticeable in several lines. The foreign trade in manufactured merchandise continues to be an important factor in the business of the country.

very brisk at the present time and Brass Goods prices in this section are still very much unsettled, but the business in the West and in the middle section of the country is in such shape that manufacturers should have no difficulty in getting the advanced prices.

Enameled Bathtubs.—As noted in our last issue, the Standard Sanitary Mfg. Company issued on April 1 a new price-list on the Porcelain Enameled Bathtubs of their manufacture, in which the list prices are materially reduced from those on the old list. A new classification of the Bathtubs was also made. The discount on the new lists, which are presented below, bring the price to practically the same level as that of the old high list. The discounts are as follows:

Regular patterns, guaranteed	30 %
High grade and special patterns, guaranteed	15 %
Pool Tubs, Receptors, Sitz Baths and Foot Tubs, guaranteed	15 %

The prices given below do not include decorations or trimmings, except common overflow fittings on regular style Tubs. All fittings and decorations for Baths will be charged separately and at net prices. A charge of 50 cents net extra is made for crating Bathtubs and $1 net extra for boxing the Tubs. The freight conditions are unchanged. The list is as follows:

Price-List D.—Porcelain Enameled Bathtubs.—April 1, 1902.

Pattern.	Made by	4-foot.	4½-foot.	5-foot.	5½-foot.	6-foot.
REGULAR PATTERNS, GUARANTEED.						
Perfecto, 2¾-inch roll rim	Standard Works	$24.00	$24.00	$27.00	$30.75	$35.25
Columbia, 2¾-inch roll rim	Ahrens & Ott Works	24.00	24.00	27.00	30.75	35.25
New Favorite, 3-inch roll rim	Ahrens & Ott Works	24.00	24.00	27.00	30.75	35.25
Occident, 3-inch roll rim	Standard Works	24.00	24.00	27.00	30.75	35.25
Eclipse, 3-inch roll rim	Dawes & Myler Works	24.00	24.00	27.00	30.75	35.25
Aurora, 3-inch roll rim	Dawes & Myler Works	28.00	28.00	31.50	35.50	43.00
Elysian, 3-inch roll rim	Standard Works	28.00	28.00	31.50	35.50	43.00
French Pattern, 3-inch roll rim	Ahrens & Ott Works	28.00	28.00	31.50	35.50	43.00
Newton, 3-inch roll rim	Dawes & Myler Works	24.00	24.00	27.00	30.75	35.25
Levant, 3-inch roll rim with extension end	Standard Works	27.00	27.00	30.00	33.75	38.25
Elaine, 2¼-inch roll rim	Dawes & Myler Works	24.00	24.00	27.00	30.75	35.25
Keystone, 2¼-inch roll rim	Dawes & Myler Works	21.75	21.75	24.00	27.75	32.25
Leader, 2¼-inch roll rim	Ahrens & Ott Works	21.75	21.75	24.00	27.75	32.25
Crown, 2¼-inch roll rim	Standard Works	21.75	21.75	24.00	27.75	32.25
Arlene, 2¼-inch roll rim	Dawes & Myler Works	21.75	21.75	24.00	27.75	32.25
Ionian, 2¼-inch roll rim	Dawes & Myler Works	21.75	21.75	24.00	27.75	32.25
Gotham, 1½-inch roll rim	Dawes & Myler Works	21.75	21.75	24.00	27.75	32.25
Economy, 1½-inch roll rim	Ahrens & Ott Works	21.75	21.75	24.00	27.75	32.25
Shawmut, 1½-inch roll rim	Standard Works	21.75	21.75	24.00	27.75	32.25
Empire, 1¾-inch roll rim	Dawes & Myler Works	21.75	21.75	24.00	27.75	32.25
HIGH GRADE AND SPECIAL PATTERNS, GUARANTEED.						
Majestic, 4-inch roll rim	Standard Works	....	35.00	39.00	43.00	....
Luxuria, 4-inch under roll rim	Ahrens & Ott Works	....	33.00	37.00	41.00	45.00
Hygeia, 4¾-inch under roll rim	Ahrens & Ott Works	....	....	35.00	39.00	43.00
Monarch, 4¾-inch roll rim	Dawes & Myler Works	....	....	35.00	39.00	43.00
Thelma, 3-inch roll rim, 5-inch on end	Dawes & Myler Works	30.00	30.00	35.00	40.00	....
Ideal, 3-inch under roll rim	Ahrens & Ott Works	....	30.00	33.50	38.00	42.50
Morris, 3-inch roll rim, wide end	Standard Works	30.00	30.00	35.00	40.00	....
Albion, 4¾-inch roll rim	Standard Works	....	40.00	43.50	47.00	....
Olympia, 3-inch under roll	Ahrens & Ott Works	....	....	37.00	41.00	45.00
Vedora, 4¾-inch under roll	Ahrens & Ott Works	....	....	40.00	43.50	47.00
Royal Brighton, 4¾-inch roll rim	Dawes & Myler Works	....	....	40.00	43.50	47.00
Madeline, 3-inch roll rim	Standard Works	31.00	31.00	36.00	41.00	....
Lorraine, 3-inch roll rim and base	Standard Works	....	....	35.00	40.00	....
Diana, 3½-inch roll rim	Ahrens & Ott Works	....	....	36.00	41.00	46.00
Brighton, 3-inch roll rim	Dawes & Myler Works	33.00	33.00	37.00	42.00	....

Pattern.	Made by	Plate.	Sizes.	List.
Pool Tubs, 3-inch roll rim	Standard Works	12S	48 x 42 inches.	$40.00
Receptors, 1½-inch roll rim	Standard and Dawes & Myler Works	99S and 100C	36 x 36 inches.	25.00
Receptor, 1½-inch roll rim	Dawes & Myler Works	101C	42 x 42 inches.	35.00
Sitz Bath, 3-inch roll rim	Standard Works	90S	29 x 28 inches.	25.00
Sitz Bath, 3-inch extended rim	Standard Works	98S	31½ x 34 inches.	30.00
Sitz Bath, 3-inch extended rims	Standard Works	98½S	31½ x 34 inches.	30.00
Sitz Bath, 3-inch roll rim	Ahrens & Ott Works	A1550	32 x 31 inches.	25.00
Sitz Bath, 2½-inch roll rim	Dawes & Myler Works	110C	29½ x 27 inches.	25.00
Sitz Bath, 2½-inch extended rim	Dawes & Myler Works	111C	28 x 30 inches.	25.00
Foot Tub, 2¼-inch roll rim	Ahrens & Ott Works	A1551	26 x 25 inches.	15.00
Foot Tub, 2¼-inch roll rim	Standard Works	94 and 95S	19¼ x 22¼ inches.	15.00
Foot Tub, 2½-inch roll rim	Dawes & Myler Works	114C	22½ x 18½ inches.	15.00
Foot Tub, 2½-inch roll rim	Dawes & Myler Works	115C	25 x 23 inches.	15.00

NOTES ON PRICES.

Plumbers' Brass Work.—A meeting of the manufacturers of Plumbers' Brass Work was held at the Arena, New York City, on Thursday and Friday, March 28 and 29. Representatives from all sections of the country were present at this meeting. According to reports the business of the Brass manufacturers is in much better shape. It is said that a strong feeling was developed at the meeting in favor of an advance of 10 per cent. in the price of Brass Goods, and that this advance was strongly recommended by the association, but no final action was taken to that end. It is understood that the matter will come up again in a very short time, and that the advance is likely to be adopted all over the country. Business in the metropolitan district is not

Cast Iron Sinks.—The manufacturers of Cast Iron Sinks withdrew prices on the 5th inst. and announced an advance of 10 per cent. The advance went into effect immediately. All the larger manufacturers of Sinks have adopted the new discounts. Seemingly, the prices were issued after joint action had been taken by the manufacturers.

Solder.—Manufacturers of Solder have advanced quotations about ½ cent a pound on the strength of the rise in Pig Tin. Jobbers are quoting small lots of Half and Half, guaranteed, at 18 to 18½ cents and No. 1 at 15½ to 17 cents per pound.

Solder Testing Apparatus.—The Solder Testing Apparatus illustrated and described in another part of this issue is manufactured and sold by F. C. Kuemmel, with Bartlett, Hayward & Co., Baltimore, Md., at $2.50 net.

Maslin Kettles.—The market on this line of goods is firm and steady at the somewhat higher prices recently determined by the manufacturers.

Radiators.—Under date of April 1 the United States Radiator Company, Dunkirk, N. Y., issued a new price-list of their Radiators. A careful examination shows a few unimportant changes in price.

Wire Nails.—The demand for Wire Nails in New York is referred to as satisfactory. Considerable difficulty is experienced in supplying the wants of the trade, as the mills are now oversold for at least 30 days. Stocks are broken, and the market is practically bare of some sizes. The market has a decidedly firm tone. Small lots from store are quoted at $2.30 per keg.

Cut Nails.—The market is firm at the advance of 5 cents per keg made last week. Difficulty continues in obtaining full assortments of Nails from mills, and local stocks are somewhat broken. Small lots from store are quoted at $2.25 to $2.30 per keg.

White Lead.—Unsettled weather has the effect of curtailing the demand for White Lead in Oil. This, however, has enabled the manufacturers to catch up with their orders to some extent. Indications point to a large spring business. Prices are firm and unchanged, retail quantities being sold at 6½ to 6¾ cents per pound.

Linseed Oil.—The movement in Linseed Oil is fair and the market is strong. Quotations are without change, City Raw, in small lots, being quoted at about 64 to 64½ cents per gallon, Boiled Oil being 2 cents advance on Raw.

Spirits Turpentine.—The price of Turpentine has declined further during the week. The unsettled condition of the market has kept large buyers from purchasing. The demand is light in the local market. Small lots of Turpentine are quoted at about 46 to 46½ cents per gallon.

Old Rubber.—The market is dull and prices are not strong. Dealers in New York and vicinity are paying about the following figures:

Car Springs, ton lots, per lb	5 c.
Rubber Shoes, less than carloads, per lb	6½ to 6¾c.
White Wringer Rolls, per lb	6¾c.
Inside Bicycle Tubing, per lb	21½c.
Outside Tubing, per lb	6 c.

TRADE NOTES.

The Sanitary Refrigerator Company of Detroit, Mich., have been incorporated with a capital stock of $250,000.

The Acme Fuel Compound Company, with principal office at 185 Montgomery street, Jersey City, N. J., have been incorporated with a capital of $125,000 by John W. Avery, George R. Allison and G. C. Thornton, to manufacture Fuel Compounds.

The Forsyth Pattern Works, Youngstown, Ohio, have bought the ground and buildings vacated by the American Can Company in that city, and will adapt them for extension to their Pattern making plant.

The Smokeless Fuel Company, Cincinnati, Ohio, are sending to manufacturers a neat little circular inviting a test of their new River Smokeless Coal, which is furnished in egg, lump and run of mine sizes.

New York Metal Exchange.

The following standing committees for the fiscal year 1902-1903 have been announced by the Board of Managers of the New York Metal Exchange: Executive: Adolph Lewisohn, chairman; H. H. Hendricks and Wm. Jay Ives. Finance: L. Nachmann, chairman; B. Hochschild and Geo. W. Jaques. Law: J. H. Lobdell, chairman; Wm. Jay Ives and B. Hochschild. Floor: C. S. Trench, chairman; L. Nachmann and C. Mayer, secretary. Warehouse: B. Hochschild, chairman; S. A. Jennings, S. H. Bolles, Jr., J. H. Lang and Robt. Gentle. Trade: C. S. Trench, chairman; L. Nachmann, E. A. Caswell, L. Vogelstein and C. Mayer. Pig Iron: G. H. Hull, chairman; James E. Pope, Jr., and Thos. W. Stiles. Pig Tin: B. Hochschild, chairman; L. Nachmann and C. S. Trench. Copper: Jesse Lewisohn, chairman; B. Hochschild and L. Nachmann. Lead: J. H. Lang, chairman; E. A. Caswell and Frank H. Davol. Spelter: G. E. Behr, chairman; W. Fisher and L. Vogelstein. Quotations: Edmund Hendricks, chairman; Jesse Lewisohn, C. S. Trench, J. Langloth and C. Mayer, secretary.

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ROOFING SUPPLIES, METALS, TIN PLATES, &c.

REVISED APRIL 11, 1902.

Aluminum—

No. 1 Aluminum (guaranteed over 99% Pure), in ingots for remelting.

Small lots	⅌ ℔, 37¢
100-℔ lots	⅌ ℔, 35¢

Aluminum Sheet, B. & S. gauge. In lots of 50 ℔s or more.

Wider than	6-in.	14-in.	24-in.
And including	14-in	24-in.	30-in.
	⅌ ℔	⅌ ℔.	⅌ ℔.
Nos. 13 to 19	$0.42	$0.44	$0.47
" 20	.44	.46	.49
" 21 to 23	.46	.48	.51
" 24	.46	.50	.53
" 25	.47	.51	.54
" 26	.47	.54	.59
" 27	.48	.57	.62
" 28	.48	.57	.64
" 29	.49	.60	.69
" 30	.50	.64	.77

Note.—Lots of less than 50 ℔s 5¢ ⅌ ℔ extra.

Antimony—

Cookson	⅌ ℔. 10¼@10¾¢
Hallett's	⅌ ℔. 8⅜@8¾¢
U. S.	⅌ ℔ 8⅜@8⅝¢

Brass, Roll and Sheet...... 30%

Conductors—

Corrugated.

Round or Square.—

Galvanized ½ or more. N'st'd	70&5%
" Not Nested	70&2½%
" Plain Round, ½ or more, Nested	70&5%
Galvanized, Plain Round, Not Nested.	70&2½%

Spiral Riveted.

Galvanized	40%

See also *Elbows and Shoes; Eave Trough Miters; Strainers, Conductor.*

Conductor Strainers—

See *Strainers, Conductor*

Copper—

Lake Ingot	13¼@13¾¢
Casting	13 @13¼¢
Sheet and Bolt	18¢ ⅌ ℔ basis
Cold Rolled Sheets	19¢ ⅌ ℔ basis
Cold Rolled and Polished Sheets	20¢ basis
Planished Sheets	21¢ basis
Bottoms, Pits and Flats	⅌ ℔ 22¢ basis

Eave Trough Galvanized

Territory	L. C. L.
Eastern	75&10%
Central	75&7½%
Southern	70&12½%
S. Western	70&10%

Terms, 2% for cash.

Eave Trough Mitres—

Lap or Slip Joint	list, 25%

Elbows—Plain Adjustable—

Eastern List.

Tin	30%
Galvanized	30%
Perfect Elbows	40%

Stove Pipe—

Four-Piece

	4	4½	5	5½	6-inch.
No. 1.	$0.80	.85	.90	1.00	1.05 per doz.
No. 2.	.65	.70	.75	.80	.85 "
No. 3.	.60	.63	.65	.70	.80 "

Elbows and Shoes—

Galvanized	60%

Gasoline—

See *Petroleum Products.*

Iron, Sheet—*Black.*

	One Pass, C. R., Soft Steel.	R. G. Cleaned.
Nos. 14 to 16	⅌ ℔. 3.50	3.55¢
Nos. 18 to 21	⅌ ℔, 3.60	3.65¢
Nos. 22 to 24	⅌ ℔, 3.70	3.75¢
Nos. 25 and 26	⅌ ℔, 3.80	3.85¢
No. 27	⅌ ℔, 3.90	3.95¢
No. 28	⅌ ℔, 4.00	4.05¢

Russia, Planished, &c.

Genuine Russia, according to assortment	⅌ ℔ 11@11 ¢
Do. Stained	6@10½¢
Patent Planished	⅌ ℔ A, 11¢; B, 10¢ net

Galvanized.

Nos. 10 to 16	⅌ ℔, 12¢	70@70&2½% off
Nos. 17 to 21	⅌ ℔, 13¢	
Nos. 22 to 24	⅌ ℔, 14¢	
Nos. 25 to 26	⅌ ℔, 15¢	
No. 27	⅌ ℔, 16¢	
No. 28	⅌ ℔, 17¢	
No. 29	⅌ ℔, 19¢	
No. 30	⅌ ℔, 21¢	

36 in. 1¢ ⅌ ℔ higher.

Lead—

American Pig		4.45@4½¢
Bar		5@5⅛¢
Pipe	6½¢	20% off
Tin Lined Pipe	12½¢	20% off
Block Tin Pipe	35 ¢	20% off
Sheet Lead	7¼¢	20% off

Old Lead in exchange, 3¼¢ ⅌ ℔.

Mitres Eave Trough—

See *Eave Trough Mitres.*

Nickel—

Per ℔	55@60¢

Paints, Oils, &c.—

Leads—

Lead, American White, in Oil: Lots of 500 ℔ or over	6¼	@ 6½
Lots less than 500 ℔	6½	@ 6¾
Lead, White, in oil, 25 ℔ tin pails, add to keg price		@ ½
Lead, White, in oil, 12½ ℔ tin pails, add to keg price		@ 1
Lead, White, in oil, 1 to 5 ℔ assorted tins, add to keg price		@ 1½
Lead, White, Dry in bbls	5¾	@ 6
Lead, Red, bbls., ½ bbls. and kegs: Lots 500 ℔ or over		@ 6
Lots less than 500 ℔		@ 6½

Oils—

Linseed, City, raw	⅌ gal. 64@64½¢
Linseed, City, boiled	66@66½¢
Linseed State and West'n, raw	63@63½¢

Spirits Turpentine—

In Southern bbls	46 @46½¢
In machine bbls	47 @47½¢

Putty—

In bulk	$1.25
In bladders	2.25
In cans 12 ℔ to 25 ℔	2.25
In cans 1 ℔ to 5 ℔	3.25

Petroleum Products—

In Barrels (Barrel Included)

Stove Gasoline	⅌ gal. 10½@11¢
Kerosene	⅌ gal. 12@13¢

Pipe, Drain...... 40%

Pipe, Spiral—

See *Conductors.*

Registers—

List Sept. 2, 1901.

Black Japanned	60&10@60&10&5%
White Japanned	60&10@60&10&5%
Nickel Plated	60&10@60&10&5%
Bronze Finishes in Imitation of Gold, Silver, Copper or Bronze	60&10@60&10&5%
Electroplated in Brass, Bronze or Copper	60&10@60&10&5%
White Porcelain	60%
Solid Brass and Bronze Metal	50%

Roofing Material—

1 Ply Tarred Paper.	⅌ ton. $30.00@31.00
2 Ply Tarred Paper	⅌ roll, 108 sq. ft. 50@55¢
3 Ply Tarred Paper	⅌ roll, 108 sq. ft. 70@75¢
Slater's Felt	roll 500 sq. ft., 50@60¢
Roofing Pitch	⅌ bbl. $2.38

Rosin—

Common and Good—Strained.

Rosin, C. & D.	⅌ bbl.	$1.62½@$1.65
Rosin, E. & F.	⅌ bbl.	1.72½@ 1.75
Rosin, G. & H	⅌ bbl.	1.77½@ 1.80
Rosin, I. & K.	⅌ bbl.	2.10 @ 2.15
Rosin, M. & N.	⅌ bbl.	3.05 @ 3.60

Shoes and Elbows—

See *Elbows and Shoes.*

Slate Roofing—

f. o. b. cars, Quarry Station.

	According to size.
Pennsylvania:	
Best Bangor, ⅌ sqr.	$3.25@$4.50
No. 1 Bangor Ribbon, ⅌ sq	3.00@ 3.50
Pen Argyle, ⅌ sqr.	3.00@ 3.75
Peach Bottom, ⅌ sqr.	4.85@ 5.60
No. 1 Boys, ⅌ sqr.	3.35@ 3.55
No. 1 Chapman Keystone, ⅌ sqr	3.25@ 4.25
Vermont:	
Sea Green, ⅌ sqr.	$2.00@$3.25
Purple, ⅌ sqr	3.75@ 4.25
Unfading Green, ⅌ sqr.	3.25@ 4.50
Red, ⅌ sqr	7.00@11.00
Maine:	
Brownville, Unfading Black, No. 1 quality	$5.25@7.50
No. 2 quality	$4.25@6.00

Solder—

½&½ guaranteed	18@18½
No. 1	15½@17

Prices of Solder indicated by private brands vary according to composition

Soldering Fluids—

	Per Pound. Barrels	Smaller Q'ntities
Concentrated Flux	4c	5c
Eureka Flux: Triple Strength	3c	3½c
Extra Concentrated	4½c	5c
Crystal		7c
Gedney's Fluid	2c	2c
Lennox Fluid	2c	3c
Perfection Flux	3c	3½@4c
Yager's Salts, 1 lb. bottles		each, 50¢
5 lb. bottles, per lb.		45¢

Soldering Coppers—

Per ℔	20@22¢

Spelter—

Western Spelter	4.60@4.70¢

Spiral Pipe—

See *Conductors.*

Stove Pipe Elbows—

See *Elbows, Stove Pipe.*

Stove Trucks—

See *Trucks, Stove.*

Strainers, Conductor—

Galvanized	50.

Tin Pigs and Bars—

Banca, pigs, ⅌ ℔	28½@28¾¢
Straits, pigs, ⅌ ℔	28½@28¾¢
Straits, in bars, ⅌ ℔	29½@29¾¢

Tin Plates, American

Charcoal Plates, Bright—

N. B.—The price of 20 x 28 sizes double the price of 14 x 20.

Calland Grade:		
IC,	14 x 20	$7.50
IX,	14 x 20	9.00
IXX,	14 x 20	10.25
IXXX,	14 x 20	11.50
IXXXX.	14 x 20	12.75
Melyn Grade:		
IC,	14 x 20	7.00
IX,	14 x 20	8.50
IXX,	14 x 20	9.75
IXXX,	14 x 20	11.00
IXXXX	14 x 20	12.25
Allaway Grade:		
IC,	14 x 20	6.50
IX,	14 x 20	7.60
IXX,	14 x 20	8.70
IXXX,	14 x 20	9.80
IXXXX,	14 x 20	10.90

Coke Plates, Bright—

Bessemer Steel, or equal to J. B. Grade, full weight	IC, 14 x 20.	$4.90@5.00
" "	IX, 14 x 20	$6.00

N. B.—The reduction per box on lighter Plates than IC, 14 x 20, is as follows:

100 ℔	15¢
95 ℔	20¢
90 ℔	25¢
85 ℔	30¢

Terne Plates—

N. B.—The following prices are for IC 20 x 28, the rate for 14 x 20 being half as much. IX is usually held at $2 per box advance for 8 to 10 ℔ coating and $2.50 to $3 advance for 15 ℔ and upward.

About 40 ℔ coating	$16.00@16.50
About 30 ℔ coating	15.25@15.75
About 20 ℔ coating	13.25@13.75
About 15 ℔ coating	11.25@11.75
About 8 ℔ coating	@10.00

Boiler Plates, American—

IXX, 14 x 26..(112 sheets)	$12.50
IXX, 14 x 28..(112 sheets)	13.50
IXX, 14 x 31..(112 sheets)	15.00

Troughs, Eave—

See *Eave Trough.*

Trucks, Stove—

Improved Lock Frame, per doz.	$15.00
Steel Lock Frame, per doz.	18.00
Daisy Improved pattern, ⅌ doz.	18.00

Tubes and Tubing—

Brazed Brass, List June 6, 1898	40%

Copper and Bronze, 3c per lb. list more than Brass.

Seamless Brass Tubes, net list Feb. 6 1899

Tin	50%
Galvanized	50%
Fittings for do	40%

Zinc—

600 ℔ casks ⅌ ℔	6¾¢
Per ℔	7¼¢

PLUMBERS' AND STEAM FITTERS' SUPPLIES.

Boilers, Galvanized—

Standard Boilers:	
30 gal	70&10%
35 and 40 gal	70%
Other sizes up to 52 gal	60@60&10%
52 gal. and above	60%
Extra Heavy Boilers:	
18 to 52 gal	60%
53 gal. and above	55%

Brass Work, Plumbers'—

List of December 7, 1896.

Compression:	
Basin Cocks	65%
Bath Cocks and Double Bath Cocks	65%
Bibs.	65%
Bibs, Flanged	65%
Fuller:	
Bibs	70%
Basin Cocks, Nos. 1 to 4	70%
Bath Cocks, No. 4½	$2.40 each net
Ground Key Work:	
Finished Bibs	55&5%
Rough Bibs	70%
Rough Stop and Stop and Waste Cocks	70@70&5%
Rough Stop and Stop and Waste Cocks, Patented	65@65&5%

Miscellaneous—

Basin Clamps	60@65%
Basin Plugs	60@65%
Chain Stays.	60&5@70%

Iron Boiler Couplings:

	Lead Pipe.	Iron Pipe.
Plain Face.. ⅌ set	$0.95	$1.05
Ground Face ⅌ set	$1.00	$1.10

Sink or Bath and Wash Tray Plugs	60@65%
Soldering Nipples	70&5@75%
Soldering Unions	70&5@75%
Union Elbows, Hot Water Heating	75@75&15%

Cocks, Valves, &c.—

Cocks—

Brass—

Air and Radiator Air	75@75&5%
Gas Meter and Union Meter	65@70%
Steam	65@70%

Iron—

All Iron	70@70&10%
Iron with Brass Plugs	65@70%

Valves—

Brass—

Check	65@70%
Garden Hose	65&10@70%
Gate	65@65&10%
Globe and Angle, hose outlet	65@65&10%
Globe, Angle and Cross	65&10@70&5%
Horizontal, Vertical and Angle Check	65@65&10%
Hot Water Radiator	75%
Radiator	70&10%
Safety	65%
Safety, Low Pressure	65%
Jenkins' Disc:	
Check	65%
Gate	65%
Globe, Angle and Cross	70%
Radiator	80%
Radiator, Corner	75%
Safety	65%

Iron—

Iron Body	70@70&5%
Foot	65@70%
Jenkins Bros.':	
All Iron, except Gate	40&5%
All Iron Gate	35@40%
Iron Body, except Gate	60%
Iron Body Gate	50@50&5%
Swing Check	50%

Earthenware—

Brown Glazed Wash Tubs	20%
Brown Glazed Sinks, Kitchen and Pantry	20%
Basins, Urinals and Hoppers	45%
Closet Bowls, Sundries, Washouts and Pedestals	50%

Fittings—

Brass Fittings—

Finished	70@75%
Rough	70@75%
Bushings	70@75%
Nipples	70@70&2½%
Unions, Rough and Finished	70@70&5%

Iron—

Cast Iron Fittings, Black and Galvanized, Standard sizes	65@70%
Cast Iron Bushings and Plugs	65@70%
Cast Iron Flanges	65@70%
Cast Iron Floor Flanges	65@70%
Malleable Iron Fittings (from ℔ list)	50%
" " Bushings	65@70%
" " Unions	65@70%
" " Unions, Flange	60&10@70%
" " Pipe Hangers, Universal	50%
Wrought Iron Nipples	65@70%
" " Couplings	60@65%
" " Long Screws	60@65%

Lavatories—

Porcelain Enameled Iron	30@30&10%

Oakum—

Plumbers' Oakum, 50 lb. bales, ⅌ ℔ 2½¢

Pipe—

Brass, Iron Pipe Size—

⅛	¼	½	¾ to 3 Inch
$0.38	.34	.29	.23 ⅌ ℔

Cast Iron Soil—

List Feb. 25, 1901.

2 to 6 inch inclusive.

Standard	50&5%
Extra Heavy	60&7½%
All Fittings	65&10%

7 to 15 inch.

Pipe and Fittings, Standard and Extra Heavy	50%

Wrought Iron—

List Feb. 15, 1900.

	Black.	Galv
⅛ to ½ inch	55%	41%
¾ to 12 inch	65%	50%

Radiators—

Standard List.

Steam	50&2½%
Hot Water	50%

Sinks, Etc.— Cast Iron—

	Black.	Galv
Sinks, Square, Half Round and Corner	60@65%	60@65%
Sink Legs.	60%	60@65%
Sink Backs	60%	60@65%
Boiler Stands, Cast Iron	60@60&10%	
Cesspools, Cast Iron	60%	

Wrought Steel Sinks—

New Era, Galv'd and Enameled.	70&5%
New Era, Painted	50&10%
L. & G.	50%

Traps—

Drawn Lead Traps, List June 3, 1901	50&5%

Tubs, Bath—

List April 1, 1902.

Cast Iron Enameled Bath Tubs.

Regular Patterns, Guaranteed	30%
All Special Patterns	15%
Solid Copper, list of Feb. 1, 1899	40%

Solid Porcelain—Class A, 30%; B, 40%; C, 50%.

Steel Clad Copper Lined, list of Feb. 1, 1899	50@55%

ALPHABETICAL LIST OF ADVERTISERS.

Adler, H. & Co. 6
American Blower Co. 15
American Galvanizing Wks. 65
American Radiator Co. 11
American Sheet Steel Co. 1&68
American Steam Gage & Valve Mfg. Co. 1
American Tin Plate Co. 68
Anderson Coupling Co. 22
Arcade Mfg. Co. 17
Armstrong Mfg. Co. 22
Asheville Mica Co. 17
Asphalt Ready Roofing Co. 69
Auld & Conger Co. 65
Barstow Stove Co. 76
Beckwith, P. D., Est. of 2
Berger Bros Co. 62&66
Berger Mfg. Co 70
Bergstrom Bros. & Co. 10
Bertsch & Co. 74
Bliss, E. W. Co. 74
Blodgett, G. S. Co. 14
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Brand Stove Co. 6
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Colwell Lead Co. 20
Cooney & Geiger 64
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Cope, Geo. W 19
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Dixon, Jos. Crucible Co. 17
Double Truss Cornice Brake Co 72
Drake, W. H. 17
Drouve, G. Co. 65
Edwards, J. H. 20
Edwards Mfg. Co. 70
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Enterprise Stove Co 6
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Floyd, Wells & Co. 13
Follansbee Bros. Co. 1
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Frand, Martin J. & Co. 71
Friedley & Voshardt 70
Frink, I. P. 76
Front Rank Steel Furnace Co 6
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Galt, John & Sons 65
Genuine Bangor Slate Co. 65
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Gummey, McFarland & Co. 67
Gurney Heater Mfg. Co. 13
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Kemp, C. M. Mfg. Co. 22
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Kieley & Mueller 1
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Koven, L. O. & Bro. 20
Kramer Bros. 62
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Wayne, Anthony Mfg. Co. 68
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Wister, L. & R. & Co 76
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Eastern Office, 284 Pearl St., NEW YORK.
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Janney, Steinmetz & Co., Phila., Pa.

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Robinson, J. M. Mfg. Co., Cincinnati, Ohio.

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Hanson & Van Winkle Co., Newark, N.J.
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Perkins, J. L. & Co. Chicago.
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Giblin & Co., Utica, N. Y.
Hart & Crouse Co., Utica, N. Y.
Hess-Snyder Company, Massillon, Ohio.
Howes, S. M. Co., Boston, Mass.
International Heater Co., Utica, N. Y.
Kelsey Heating Co., Syracuse, N. Y.
Lennox Manufacturing Co., Marshalltown, Iowa.
Magee Furnace Co., Boston, Mass.
Moncrief Furnace & Fdry Co., Atlanta, Ga.
Mueller, L. J. Furnace Co., Milwaukee, Wis.
Peck-Williamson Co., Cincinnati, O.
Richmond Stove Co., Norwich, Conn.
Robinson Furnace Co., Chicago, Ill.
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Stamford Foundry Co., Stamford, Ct.
Stanton Heater Co., Martins Ferry, O.
Thatcher Furnace Co., 240 Water St., N. Y

Gas Heaters. *(See Stoves and Ranges, Gas.)*

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Kemp, C. M. Mfg. Co., Baltimore, Md.

Granite Steel Ware.
National Enamelling & Stamping Co., 78 Beekman St., N. Y.

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Poorman Mfg. Co., Piqua, O.
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American Radiator Co., Chicago, Ill.
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Lawless, John H., Jersey City, N. J.

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Clough, R. M., Tolland, Conn.
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Robinson, J. M. Mfg. Co., Cincinnati, Ohio.

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Independent Register Co., Cleveland, Ohio.

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Pierce, Butler & Pierce Mfg. Co., Syracuse, N. Y.

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Wolff, L. Mfg. Co., Chicago, Ill.

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Cooper & McKee, Brooklyn, N. Y.
Gurney Refrigerator Co., Fond du Lac, Wis

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Independent Register Co., Cleveland, Ohio.
Seavey Mfg. Co., Boston, Mass.

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Asphalt Ready Roofing Co., 136 Water St., N. Y.
Callahan, Geo. & Co., 218 Front Street, N. Y.
Dixon, Jos. Crucible Co., Jersey City N. J.
Perkins, J. L. & Co., Chicago.
Rutland Fire Clay Co., Rutland, Vt.

Roofing Cork.
Stowell Mfg. Co., Jersey City, N. J.

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Burton, W. J. & Co., Detroit, Mich.
Canton Steel Roofing Co., Canton, O.
Eller, J. H. & Co., Canton, O.
Gummey, McFarland & Co., Phila., Pa.
New York Iron Roofing & Cor. Co., Jersey City, N. J.
Reeves Mfg. Co., Canal Dover, O.

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Salem Nail Co., 279 Pearl St., N. Y.

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Auld & Conger Co., Cleveland, O.
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Galt, John & Sons, 253 Broadway, N. Y.
Genuine Bangor Slate Co., Easton, Pa.
Johnson, E. J. & Co., 38 Park Row, N. Y.
O'Halloran & Jacobs, Pittsburgh, Pa.

Sap Spouts.
Millar, C. & Son Co., Utica, N. Y.

Schools and Colleges.
International Correspondence Schools, Scranton, Pa.

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Harrington & King Perforating Co., Chicago, Ill.

Sewer Pipe.
Rutland Fire Clay Co., Rutland, Vt

Shaped Iron and Steel, Galvanized.
Am. Galvanizing Wks., Chicago, Ill.

Shears, Sheet Metal
Heartley Machine Variety Iron & Tool Works, Toledo, O.
McSherry, Chas., Pittsburgh, Pa.
Peck, Stow & Wilcox Co., 27 Murray St., N. Y.

Sheet Metal Machinery.
Bertsch & Co., Cambridge City, Ind.
Bliss, E. W. Co., Brooklyn, N. Y.
Clough, R. M., Tolland, Conn.
Double Truss Cornice Brake Co., Buffalo, N. Y
Heartley Machine Variety Iron & Tool Works, Toledo, O.
Keene, Geo. C. & Co., Cincinnati, O.

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Miner & Peck Mfg. Co., New Haven, Conn.
Niagara Machine & Tool Wks., Buffalo, N. Y.
Ohl, Geo. A. & Co., Newark, N. J.
Peck, Stow & Wilcox Co., 27 Murray St., New York.
Phila. Machine Tool Co., Phila., Pa.
Porock, O., Cincinnati, O.
Poorman Mfg. Co., Piqua, O.
Robinson, J. M. Mfg. Co. Cincinnati, Ohio.
Stiles & Parker Press Co., Brooklyn, N. Y

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Steel & Iron Aluminum Coating Co., Connellsville, Pa.

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American Sheet Steel Co., New York.
Bruce & Cook, 186 to 190 Water St., N. Y.
McClure & Co., Pittsburgh, Pa.
Osborn, J. M. & L. A., Cleveland, O.
Wood Alan Co., Philadelphia, Pa.

Sheets, Iron and Steel.

American Sheet Steel Co., New York.
Bruce & Cook, 186 to 190 Water St., N. Y.
Coe, Jas. A. & Co., Newark, N. J.
Follansbee Bros. Co., Pittsburgh, Pa.
Gummey, McFarland & Co., Phila., Pa.
Osborn, J. M. & L. A., Cleveland, O.
Wood Co., Alan, Philadelphia, Pa.

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Colwell Lead Co., 63 Centre St., N. Y

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Canton Steel Roofing Co., Canton, O.
Drouve, G. Co., Bridgeport, Conn.
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Galt, Jno. & Sons, 253 Broadway, N. Y.
Salem Nail Co., 279 Pearl St., N. Y.

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Clason Arch. Metal Works, Providence, R. I.

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Bruce & Cook, 186 to 190 Water St., NY
Follansbee Bros. Co., Pittsburgh, Pa.
Gummey, McFarland & Co., Phila., Pa.
McClure & Co., Pittsburgh, Pa.
Meurer Bros. Co., Brooklyn, N. Y
Sanborn, J., 217 Water St., N. Y.
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Ostrander, W. R. & Co., 204 Fulton St., N. Y.

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Vogel, Wm. & Bros., Brooklyn, N. Y.

Statuary, Sheet Copper and Bronze.

Mullins, W. H., Salem, O.

Steam and Gas Fitters' Supplies.

Curtis & Curtis Co., Bridgeport, Conn
Walworth Mfg. Co., Boston, Mass.

Steam and Water Engineering and Regulating Specialties.

Kieley & Mueller, 7-11 West 13th St., N. Y.

Steel Shapes.

Cambridge Rolling Mill Co., Cambridge, Ohio.

Steel Stamps and Stencil Dies.

Schwerdtle Stamp Co., Bridgeport, Ct.

Stove Bands.

Kirk Mfg. Co., Toledo, O

Stove Cement.

Dixon, Jos. Crucible Co., Jersey City, N. J.
Rutland Fire Clay Co., Rutland, Vt.

Stove Linings.

Bridgeport Crucible Co., Bridgeport, Conn.
McLeod & Henry Co., Troy, N. Y.
Marcy Stove Repair Co., 74 Beekman St., N. Y.
Presbrey Stove Lining Co., Taunton, Mass.
Rutland Fire Clay Co., Rutland, Vt.
Valentine, M. D. & Bro. Co., Woodbridge, N. J.
Williams Stove Lining Co., Taunton, Mass

Stove and Metal Polish.

Hoffman, Geo. W., Indianapolis, Ind
Nickel Plate Stove Polish Co., Chicago, Ill
Rutland Fire Clay Co., Rutland, Vt.

Stove Patterns.

Cope, G. W., Detroit, Mich.
Gobeille Pattern Co., Cleveland, O.
Milwaukee Pattern Works, Milwaukee, Wis.
Vedder Pattern Works, Troy, N. Y

Stove Pipe Thimbles.

O. K. Mfg. Co., Buffalo, N. Y.

Stove Repairs.

Clark, Henry N. Co., Boston, Mass.
Heath, C. C. & Co., Phila., Pa.
Howes, S. M. Co., Boston, Mass.
Marcy Stove Repair Co., 74 Beekman St., N. Y.
Metropolis Sheet Metals & Stove Repairing Co., Newark, N. J.
Troy Nickel Works, Troy, N. Y

Stove Trimmings, &c.

Shields W. H. & Co., Troy, N. Y.
Troy Nickel Works, Troy, N. Y

Stove Trucks.

Arcade Mfg. Co., Freeport, Ill.
Howes, S. M. Co., Boston, Mass.

Stoves and Ranges.

Barstow Stove Co., Providence, R. I.
Beckwith, P. D., Est. of, Dowagiac, Mich.
Bergstrom Bros. & Co., Neenah, Wis.
Boyoton Furnace Co., 207 Water Street, New York.
Brand Stove Co Milwaukee, Wis.
Champion Steel Range Co., Cleveland, Ohio.
Dighton Furnace Co., Taunton, Mass.
Enterprise Stove Co., Vincennes, Ind.
Floyd, Wells & Co., Royersford, Pa.
Fuller & Warren Co., Troy, N. Y.
Gihlin & Co., Utica, N. Y.
Hess-Snyder Company, Massillon, O.
Joliet Stove Works, Joliet, Ill.
Magee Furnace Co., Boston, Mass
Pittsburgh Stove & Range Co., Pittsburgh, Pa.
Quincy Fdry. & Novelty Co., Quincy, Ill.
Richmond Stove Co., Norwich, Conn.
Sheppard, Isaac A. & Co., Phila., Pa.
Smith & Anthony Co., Boston, Mass.
Somerset Stove Foundry Co., Somerset, Mass.
Stamford Foundry Co. Stamford, Ct.
Thatcher Furnace Co., 240 Water St., N. Y.
Weir Stove Co., Taunton, Mass

Stoves and Ranges, Gas.

Adler H. & Co., Pittsburgh, Pa.
Dighton Furnace Co., Taunton, Mass.
Metropolis Sheet Metals & Stove Repairing Co., Newark, N. J.

Stoves and Ranges, Oil, Vapor and Gasoline.

Heath, C. C. & Co., Philadelphia, Pa.

Street Lamps, Gasolene.

Merkel, H., St. Louis, Mo.

Tank Heaters.

American Radiator Co., Chicago, Ill.

Tanks, Steel and Wood.

Edwards, J. H., 59 Park Place, N. Y.

Terne Plates.

American Tin Plate Co., New York.
Taylor, N. & G. Co., Phila., Pa

Tinners' Tools, Machines and Supplies.

Berger Bros. Co., Phila., Pa.
Bertsch & Co., Cambridge City, Ind.
Bliss, E. W. Co., Brooklyn, N. Y.
Bruce & Cook, 186 to 190 Water St., New York.
Follansbee Bros. Co., Pittsburgh, Pa.
Keene, Geo. C. & Co., Cincinnati, O.
Niagara Machine & Tool Wks., Buffalo, N. Y.
Ohl, Geo. A. & Co., Newark, N. J.
Peck, Stow & Wilcox Co., 27 Murray St., New York.
Stiles & Parker Press Co., Brooklyn N. Y.
Weiss, H. & Co., 20 Cliff St., N. Y

Tinners' Trimmings.

Vogel, Wm. & Bros. Brooklyn, N. Y.

Tin Plate.

American Tin Plate Co., New York.
Bruce & Cook, 186 to 190 Water St., New York.
Coe, Jas. A. & Co., Newark, N. J.
Follansbee Bros. Co., Pittsburgh, Pa.
Gummey, McFarland & Co., Phila., Pa.
McClure & Co., Pittsburgh, Pa.
Meurer Bros. Co., Brooklyn, N. Y.
Osborn, J. M. & L. A., Cleveland, Ohio.
Taylor, N. & G. Co., Philadelphia, Pa.

Tin Scrap.

Vulcan Metal Refining Co., 157 Cedar St., N. Y.
Vulcan Western Co., Streator, Ill.

Tools and Machines, Steam and Gas Fitters'.

Armstrong Mfg. Co., Bridgeport, Conn
Curtis & Curtis Co., Bridgeport, Conn.
Saunders', D. Sons, Yonkers, N. Y.

Torches, Plumbers.

Clayton & Lambert Mfg. Co., Detroit, Mich.

Tubing.

Kirk Mfg. Co., Toledo, O

Valves.

Am. Steam Gage & Valve Mfg. Co., Boston, Mass.
Crosby Steam Gage & Valve Co., Boston, Mass.
Jenkins Bros., 71 John St., New York.
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Fenn, Geo. E., Boston, Mass.
Globe Ventilator Co., Troy, N. Y.
Kramer Bros., Dayton, O.
Meurer Bros. Co., Brooklyn, N. Y.
Washburne, E. G. & Co., 46 Cortlandt St., New York.

Washers, Valves, &c.

Marston, L. G. & Co., Boston, Mass.

Washing Machines.

Wayne, Anthony Mfg. Co., Ft. Wayne, Ind.

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National Enameling & Stamping Co., 78 Beekman St., N. Y

Water Closets.

Colwell Lead Co., 63 Centre St., N. Y.
Zero Valve & Brass Mfg. Co., Buffalo, N. Y.

Water Fronts.

Clark, Henry N. Co., Boston, Mass.

Water Heaters.

Kemp, C. M. Mfg. Co., Baltimore, Md.

Wind Gates.

Miner & Peck Mfg. Co., New Haven, Ct.

SEE ALPHABETICAL INDEX, PAGE 58.

THE METAL WORKER.

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Two first-class FURNACEMEN for outside and shop work; steady work and good pay to sober and industrious men; references. "K.," care *The Metal Worker*, New York. Apr. 12

Two PLUMBERS and two TINSMITHS, at once; we have steady job all the year round for first-class, sober and reliable men; good wages; a good class of work; it will be useless for any but first-class men to apply. Fowler & Sellars, White Plains, N. Y. Apr. 12

An experienced SALESMAN visiting the hardware and stove trade for New York and the New England States, to sell a standard line of high grade air tight heaters for wood, as a side line, on commission; only first-class men with experience in this territory need apply; state territory covered. Box 88, Quincy, Ill. Apr. 12

At once, two or three men to work at FALLOW BOARDING; good wages paid. Grander Stove Company, Royersford, Pa. Apr. 12

At once, one first-class TINNER; must be able to handle heavy galvanized iron work in the line of blast pipe work; a steady job at good wages to a good, practical, trustworthy man. F. E. Newman, Johnstown, Pa. Apr. 12

A first-class TINNER, with knowledge of iron pipe work, pumps and general job work: must be sober and reliable; steady work to capable man at good wages; state age, experience and wages expected. Skinner & Richards, Collinwood, Ohio. Apr. 12

Five first-class SHEET METAL WORKERS; steady employment guaranteed if satisfactory. Klauer Mfg. Company, Dubuque, Iowa. Apr. 12

First-class TINSMITHS and SHEET METAL WORKERS in factory making sheet metal goods. Address, stating particulars, U. S. H.-L. Company, 39 Perry street, Buffalo, N. Y. Apr. 12

A PLUMBER who can help with tin work and is handy at general repairing, but must be a good plumber and that can figure on jobs; a good position for such a man; state age, wages wanted and when ready for work. J. V. Chryst, Morrison, Ill. Apr. 12

Young, single TINSMITH; must be sober and able to do a fair job on in and outside work; state wages wanted and experience, with reference. C. W. Sparks, Jr., Fishkill Village, N. Y. Apr. 12

A good PLUMBER; one who understands natural gas filling and can do a good, nice job; to such a man could give steady work at fair wages; state if married or single, age, &c. Lock Box 16, Zelienople, Pa. Apr. 12

At once, one good PLUMBER and one good TINNER; must be sober and industrious men; state wages expected and give references. Henry Hartman, Alexandria Bay, N. Y. Apr. 12

An experienced FOREMAN for stove foundry; state salary expected and experience. "S. S.," care *The Metal Worker*, New York. Apr. 12

A PLUMBER who can do plain tinning: must be able to estimate on work; apply at once. R. A. Zoeller, Tarboro, N. C. Apr. 12

At once, a first-class TINNER and SLATE ROOFER; must be a good, all around mechanic; steady job the year through for good man; answer at once, stating wages, age and experience. H. Von Blon, Upper Sandusky, Ohio. Apr. 12

Experienced man as BOOKKEEPER and DRUMMER in the cornice and roofing business. "M. W.," care *The Metal Worker*, New York. Apr. 12

At once, a first-class TINNER and SHEET METAL WORKER competent to do furnace work; none but a sober man need apply; steady job and wages $2.50 per day; married man preferred. Will S. Webber, Montgomery, Ala. Apr. 12

At once, a PLUMBER, one who can do tinsmithing; none but first-class man need apply; steady job; give experience and wages expected. E. A. Burbank, Berlin, N. H. Apr. 12

A first-class TINNER; steady job the year round. John P. Utz, Napoleon, Ohio. Apr. 12

A young, active, all around TINNER who can do general job work in country town; must be steady and sober, single, German-American preferred; steady work for the year to the right man. H. C. Seuffert, Caledonia, Minn. Apr. 12

At once, a young man as TINSMITH and PLUMBER; must be first-class workman, a fast worker and obliging; steady job; give experience and wages expected. E. A. Burbank, Berlin, N. H. Apr. 12

A first-class PLUMBER who can do a good job of tin work; to a good man a steady job will be given the year round at good wages. Frank R. Jarrell, Lexington, Ky. Apr. 12

At once, a first-class PLUMBER, especially a good lead workman and must have knowledge and ability to figure on and perform steam and hot water fitting, &c.; to the right man a steady job. Will S. Webber, 111 Bibb street, Montgomery, Ala. Apr. 12

POWER CORNICE PRESS HAND; an experienced, intelligent, faithful man desired. David Lupton's Sons, Alleghany avenue and Tulip street, Philadelphia, Pa. Apr. 12

First-class CORNICEMAN capable of making circle molding. Springfield Cornice Works, Springfield, Mass. Apr. 12

At once, a first-class TINSMITH; one who understands pumps, furnaces, plumbing and country work generally; state wages wanted and give references; a steady job for the right man; must be energetic and strictly sober. H. G. McCartney, Sollneville, Ohio. Apr. 12

A MANAGER for Chicago branch of a large Eastern manufacturer of furnaces, ranges and boilers; fine opportunity for a man of energy and ability who controls some trade. Address, with full particulars, "M. F. T.," care *The Metal Worker*, New York. Apr. 5

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By a young man as PATTERN FILER; state wages. S. Taylor, General Delivery, Newark, Ohio. Apr. 12

As WORKING FOREMAN and ESTIMATOR, by an experienced and thoroughly up to date man in galvanized iron cornice, skylight, tin and sheet iron work; can handle men to best advantage; good references if desired. "Ex. 22," care *The Metal Worker*, New York. Apr. 12

By PLUMBER; can also do outside tinning and gas fitting; steady position. "J. H.," 88 Cortland street, Belleville, N. J. Apr. 12

By TINSMITH and ROOFER. L. Kronwitz, 429 East Houston street, New York. Apr. 12

By a first-class TIN and SHEET IRON WORKER; heating and ventilating; make all kinds of patterns of furnace fittings and casings, make plans and give close estimate of all work, canopies, finials, copper, brass or tin; bench worker, &c.; married; sober; steady situation by the year. B. R. Walterhouse, P. O. Box 229, Ridgefield, Conn. Apr. 12

By a young man; strictly temperate; good experience in hardware and plumbing goods store as CLERK; also fair plumber and tinner; good knowledge of bookkeeping; best of references. "J. G.," 308 St. Clair street, N., Goldsboro, N. C. Apr. 12

As FOREMAN and CUTTER in a cornice and roofing shop, by a first-class mechanic; thoroughly understand the business in every detail and estimating from plans; sober, steady and reliable; best of references. John Williams, 351 Grove street, Brooklyn, N. Y. Apr. 12

As BOOKKEEPER, ESTIMATING CLERK or MANAGER in plumbing and steam heating establishment; experienced and thoroughly posted; can figure from plans, lay out and take charge of work; city or country. "C. S.," Lock Box 14, Thomaston, L. I., N. Y. Apr. 12

ARCHITECTURAL MODELER for statuary, ceiling, copper and zinc ornaments of any description; good estimator, corrector of plants, handler of men, know how to run drops and presses; would like position with good firm or go as partner; go anywhere. "Artist," care *The Metal Worker*, New York. Apr. 12

By thoroughly experienced GALVANIZER; up to date in all branches of the business; formerly with Steel Trust; can furnish plans and estimates. "Branches," care *The Metal Worker*, New York. Apr. 12

By a first-class PATTERN FITTER on furnaces, ranges and heaters; best references. A. Boudreau, 341 Marion street, Brooklyn, N. Y. Apr. 12

As SALESMAN for hot air furnaces or any kind of roofing; well acquainted with the trade in Western Pennsylvania, Ohio, Indiana and Michigan; good references. "Salesman," 149 Hoyt street, Buffalo, N. Y. Apr. 12

By a practical and competent TINNER and FURNACEMAN; also slate roofing; have a good knowledge of plumbing; 18 years' experience at the trade; strictly sober and reliable married man. Box 220, Penn Station, Pa. Apr. 12

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By a first-class PLUMBER; country preferred; best of references furnished. Robert Smith, 1835 Third avenue, New York. Apr. 12

By an all around HARDWAREMAN and TINNER who speaks German; with good reference; prefers town in Missouri with a good stock. P. O. Box 793, Des Moines, Iowa. Apr. 12

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By an A1 PLUMBER, STEAM and GAS FITTER, with some knowledge of tin, furnace and range work and general jobbing and overhauling; city or country; had 16 years' experience; wish steady job; married man, 33 years of age, honest, sober and reliable; first-class reference. "P. L.," care *The Metal Worker*, New York. Apr. 12

By a first-class FOREMAN; can figure plumbing, steam, hot water or tinning and am an A1 plumber, with 14 years' experience; city or country. "J. T.," care *The Metal Worker*, New York. Apr. 12

By a first-class tin, copper and sheet iron worker as SUPERINTENDENT or HEAD FOREMAN; understand all kinds of presses, dies and machinery; good experimenter; best of references; married; age 28; wages $1,500 a year. Frank Allers, 387 Summit avenue, Jersey City, N. J. Apr. 12

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By PLUMBER'S HELPER, with some reliable out of town or city party; one who is willing to give a fellow a chance; please state pay in answer; have reference. T. J. McKenna, 48 Montauk avenue, Brooklyn, N. Y. Apr. 12

TIN ROOFER, RANGE and FURNACE WORKER would like out of town position where there is steady work; also position for helper; please state wages you would give to man and helper; will go anywhere in the Union if wages are good. John Steffens, 47 Milford street, Brooklyn, N. Y. Apr. 12

By a first-class PLUMBER, steady position in country town. "A. S.," 1237 Third avenue, New York. Apr. 12

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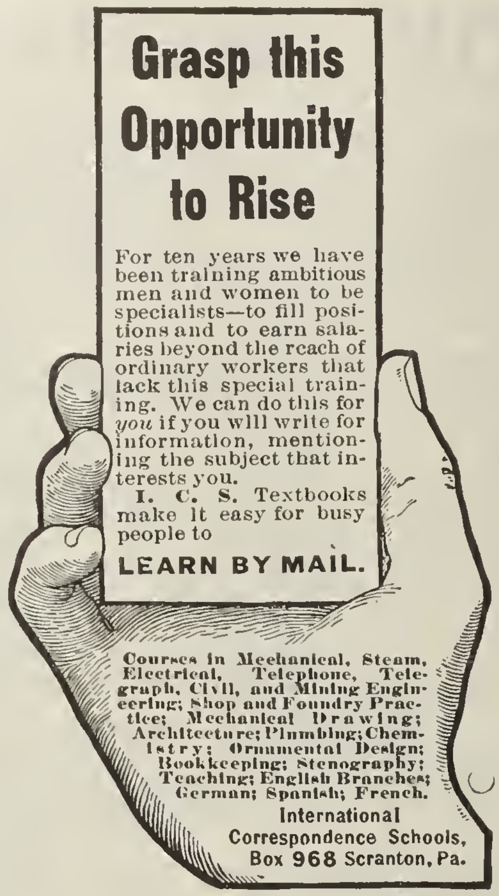

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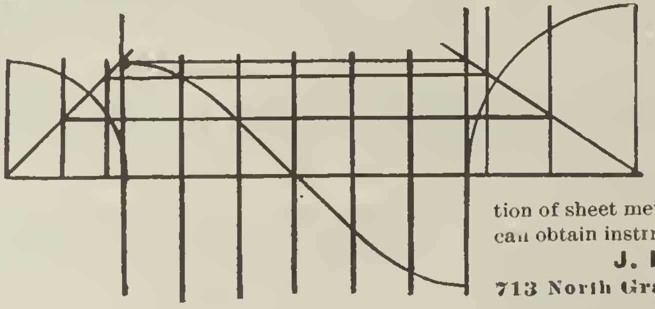
McFARLAND'S METAL WORKERS' PROTRACTOR PATTERN



In the illustration note the parallel horizontal lines drawn between points obtained from arc divisions of different radii.

This invention is patented in the U. S., Canada, England and France, and the German patent applied for.

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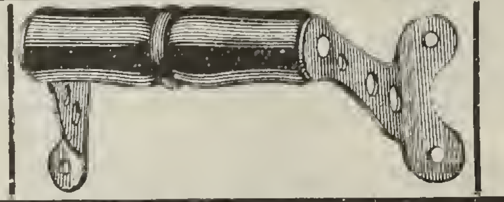

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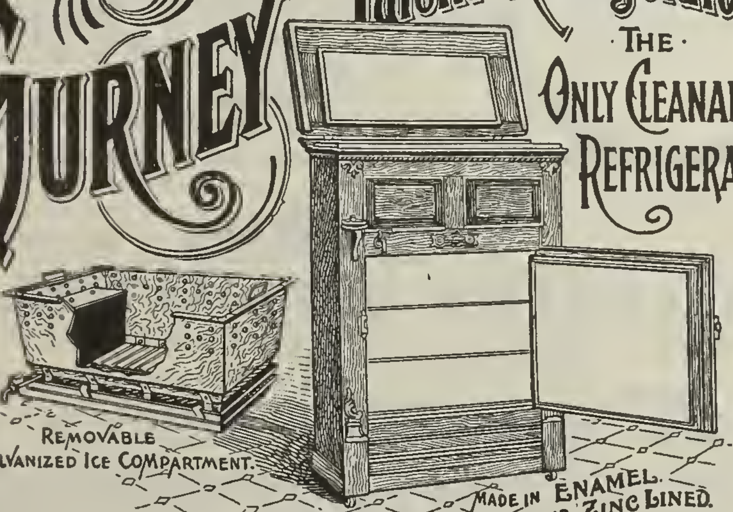
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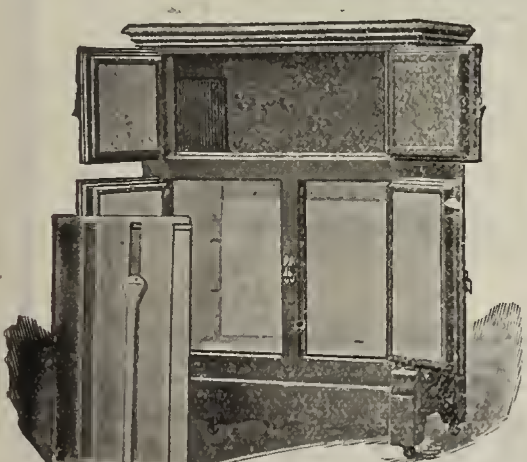

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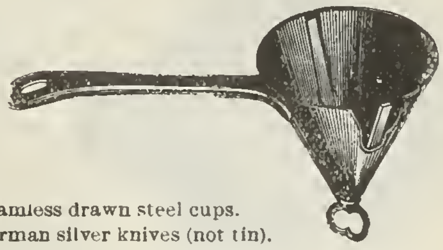

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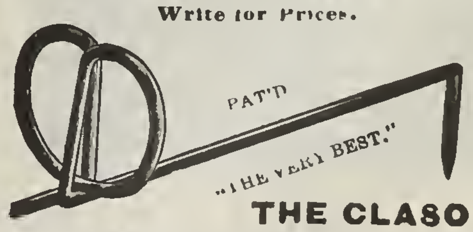

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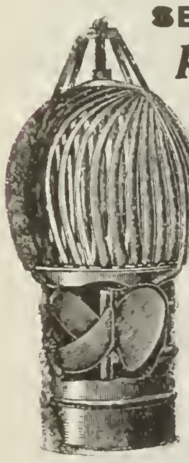

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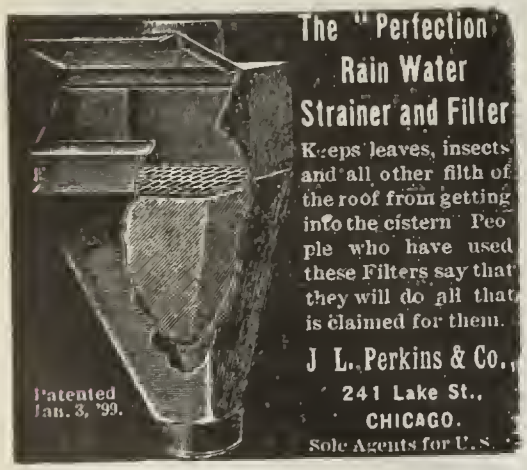

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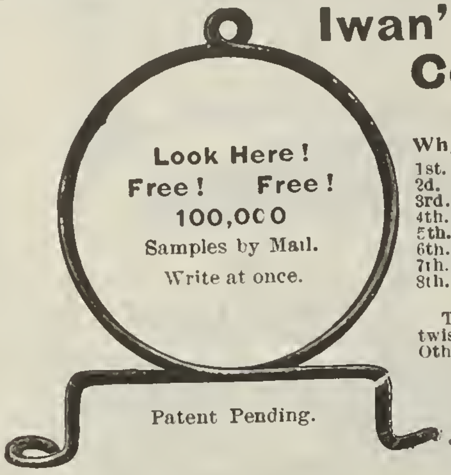

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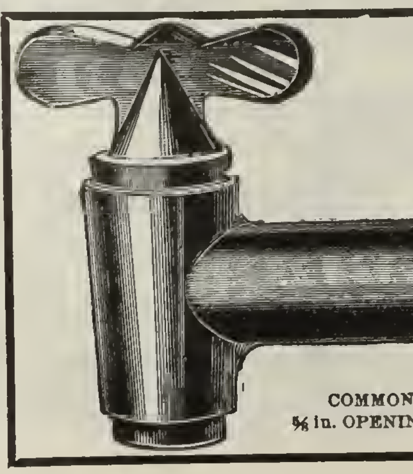

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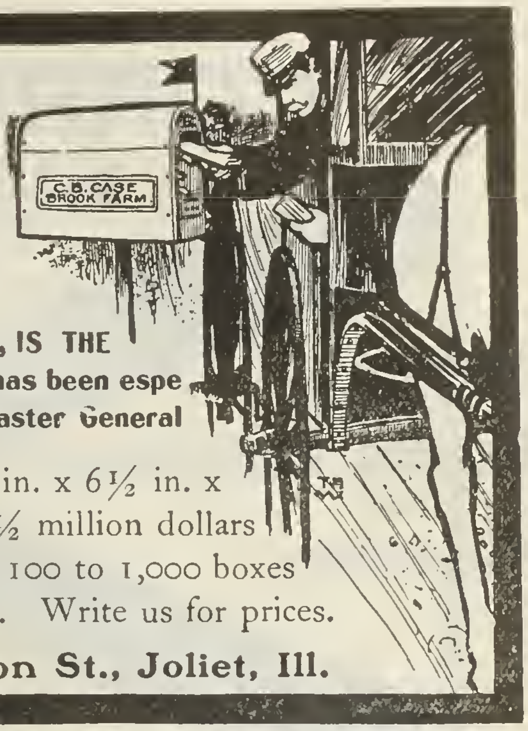

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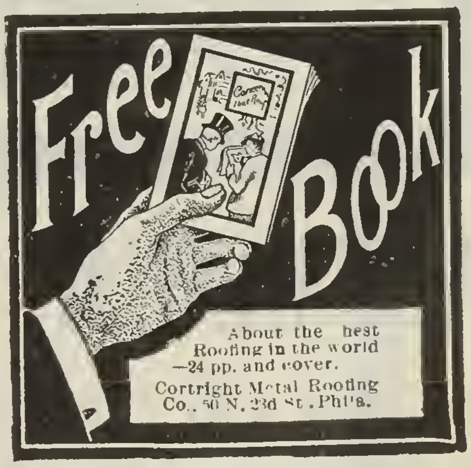

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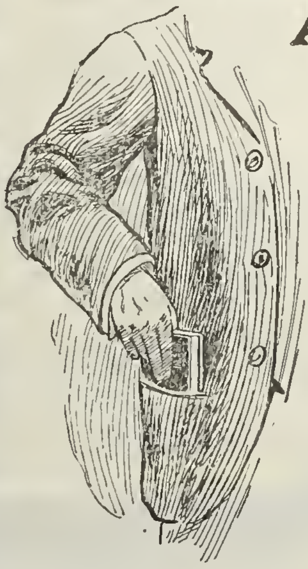

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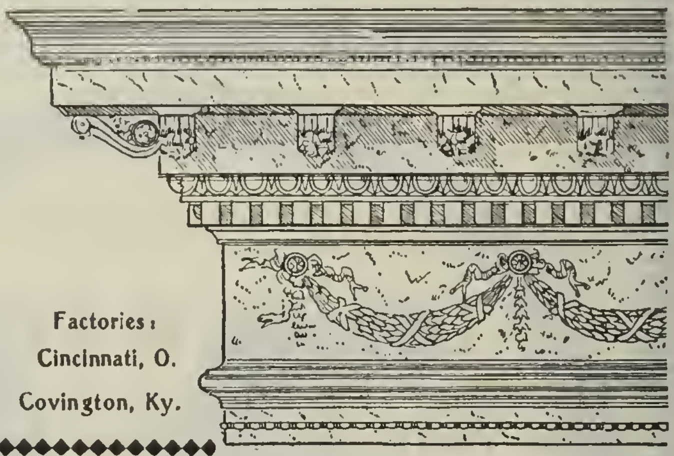

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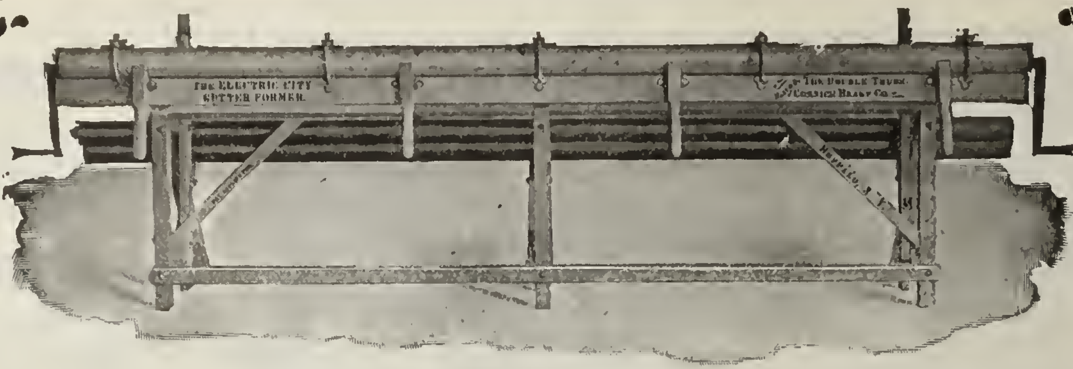
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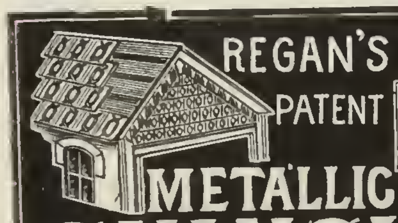
This machine will do everything that can be accomplished by any other gutter former. No other machine can do better work. No other machine can do quicker work.

The principle of this machine is entirely different from any other. It is more practical. Both the head and the gutter are formed in one continuous operation. You do not waste any time in hard work in getting the body of the gutter in proper shape. Every operation is mechanical, Each Length of gutter is formed exactly alike No other machine is as practical in its operation. No other machine will give as much satisfaction. The low price is very attractive. The machine will perfectly demonstrate our claims.

Ask us about it. We gladly furnish information and price on request.

THE DOUBLE TRUSS CORNICE BRAKE CO., - 1453 Niagara St., BUFFALO, N. Y.

Our Improved Double Truss Cornice Brake is the most practical machine of its kind in the market. Let us send you a description of its merits. Our "latest" has a double edge on front leaf for making *fine* members and corrugations.



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MADE OF TIN PAINTED OR GALVANIZED
ANYONE CAN LAY THEM. FOR FURTHER
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EASTLAKE METAL SHINGLES

For ROOFING use Our METAL SHINGLES and TILES, the best covering in the world for House or Barn. Catalogue, Prices and Testimonials free for the asking.

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METALLIC SHINGLES.

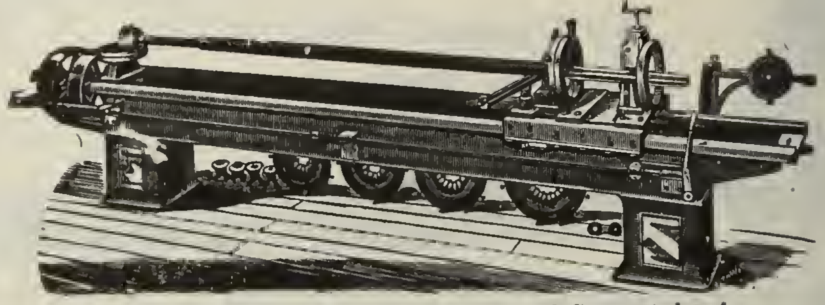
"The Quick Shippers,"
DETROIT, MICH.
(W. J. BURTON & CO.)

—An Experienced Victim.—"Come and sit down, Jimmy, and Grandma 'll read to you about 'Bees and their Ways.'"

"Oh, no, Gra'ma! Jes' read to me about bees; I know all about their ways." —*Exchange.*

THE POORMAN MANUFACTURING CO., Piqua, Ohio.

Latest and Most Perfect Machinery on the Market for Manufacturing CONDUCTOR PIPE AND EAVES TROUGH, Corrugating Machinery, Power Squaring Shears, 36 inches to 11 feet; Beading Machines, Forming Rolls, Curving Rolls, Crimping Rolls, Grooving Machines, Tinners' Squaring Shears, Power Cornice Presses, Improved Metal Roofing Machinery, Paint Machines, Etc.



Latest Improved 10-foot Plain Round, Round Corrugated and Square Corrugated Conductor Pipe Machine.

IT WILL PAY YOU TO GET OUR PRICES ON ABOVE MACHINERY

TINNERS' TOOLS, MACHINES, and SUPPLIES. Plumbers' Tools, Tinners' Hdwe., Soldering Flux, Salts, Coppers, Rosin, Roofing Cement, Rivets, Bolts, Screws, Slaters' Tools, Second-hand Machinery and SKYLIGHT GEARING.
H. WEISS & CO., 20 Cliff St., N. Y.

Art Architectural Sheet Metal Work and Statuary.

Ceiling Center Pieces, Embossed Steel Ceilings, Building Fronts, Cornices, Finials, Ornaments.

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TEES · I BARS · Z BARS · SQUARES &c.
ANY SHAPE IN ABOVE IN BESSEMER STEEL
THAT DOES NOT EXCEED IN WEIGHT 3½
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LIGHT STRUCTURAL WORK A SPECIALTY.
Cambridge Rolling Mill Co.
Cambridge Ohio.

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Old Style
Roofing Plates.

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Osborn's Old Method,
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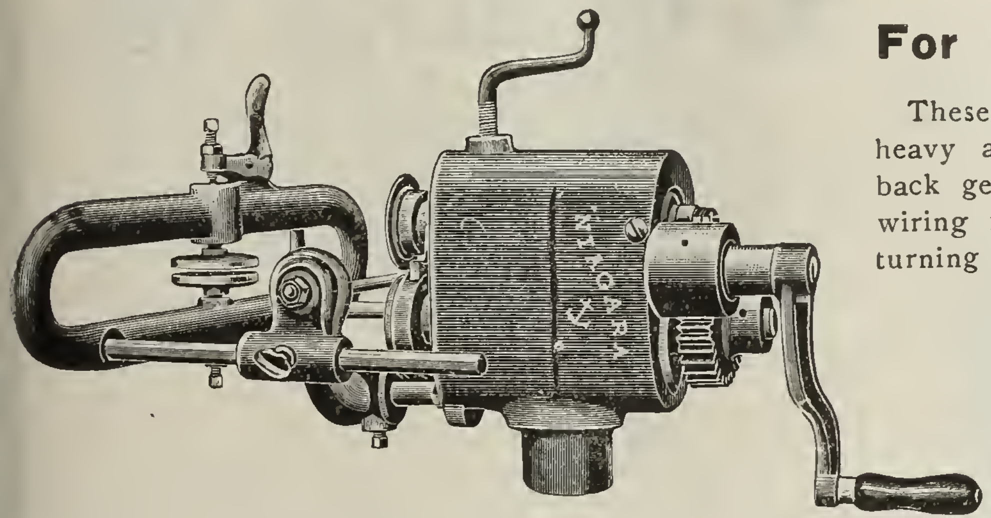

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For No. 20 and Lighter.

These machines are nearly three times as heavy as ordinary Tinners' Machines, and back geared. They are made either with wiring faces and idler, or with burring or turning faces and suitable gauges.

CIRCULAR ATTACHMENT,

shown in cut, applied to Burring Machines enables inexperienced operators to do perfect work.

Made by NIAGARA MACHINE & TOOL WORKS, Buffalo, N. Y.
Mfrs. of SHEET METAL TOOLS.

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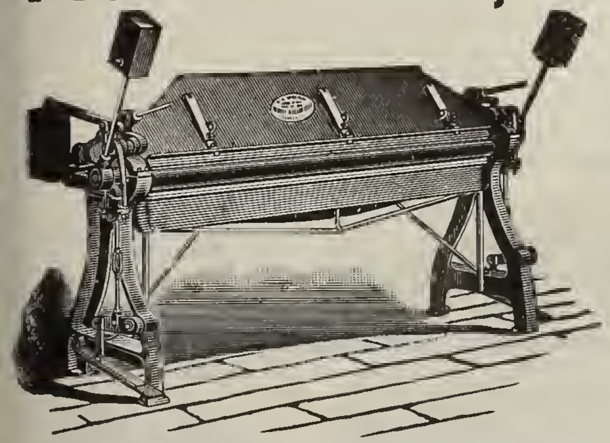
New York,
—AND—
Cleveland, Ohio.

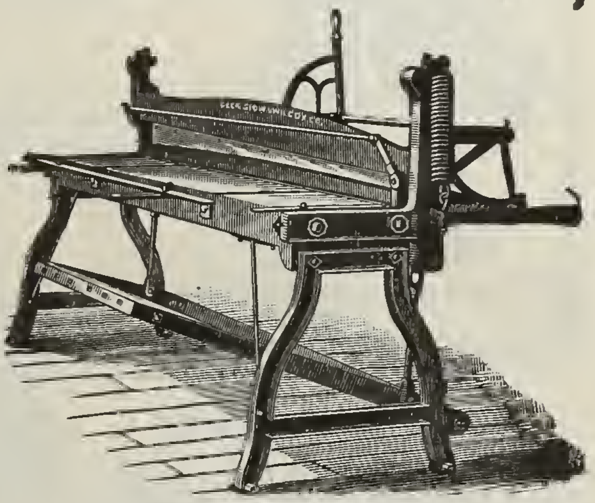
Tinsmiths' Tools of the Highest Grade.



HARE'S FOUR LEAF CORNICE BRAKE.

Hundreds sold and never a complaint. Works easily and rapidly. The universal verdict is, IT IS THE BEST IN THE WORLD. 96 inches long.

Our *Improved Eureka Cornice Brake.* Will bend No. 20 iron. 96 inches long.



CORNICE MAKERS' SQUARING SHEARS.
With Lever Arc, Automatic Gauge. Will cut No. 2 iron. 97 inches long.

HERCULES SHEARS

make the cutting of sheet metal of heavy gauges an easy task for the mechanic and a profitable operation for the employer. With them a man can cut No. 12 steel with one hand on the lever, leaving the other hand free to guide the stock while cutting elbows, ties and circles, as small as 8 inch radius; this is done without burring or buckling either piece, thus avoiding hammering and straightening, which add to the cost of the product. They split sheets of any width or length up to No. 12 gauge, cut wire or bar-steel ⅛ inch thick, cut off and mitre angle iron ⅛ inch thick, and do it perfectly.

WRITE FOR LOWER PRICES.

Manufactured by

CHAS. McSHERRY,
PITTSBURG, PA.
Designer and Builder of Labor Saving Metal Working Machinery and Tools.

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TESTING MACHINES and
SOLE AGENTS for HENNING
TESTING APPARATUS.
PRESSES and SHEARS, CORNICE PRESSES
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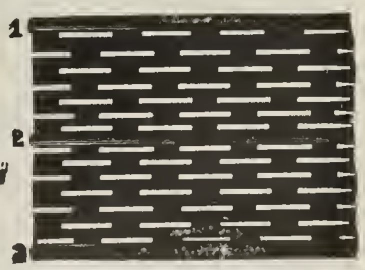
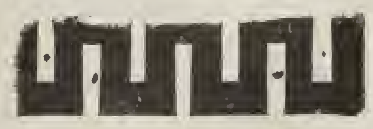
1-2-3 Corrugations add rigidity, and form a beaded joint or lap on all sheets.



Schratwieser's Patent Sheet Metal Lath.
426-432 Third Ave., cor. 7th St.. BROOKLYN



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Speaking Tubes, Whistles, Elbows, Oral Annunciators, Bell and Electric Wire Tubing.

Complete outfits of Speaking Tubes, Whistles, Pneumatic Bells, &c. A full line of Speaking Tube Hardware constantly on hand. Factory, DeKalb Ave., near Knickerbocker, Brooklyn, L. I.
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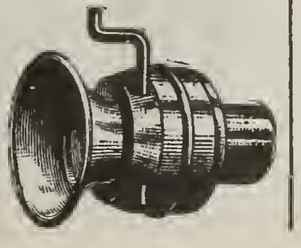

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Lightning Rods.

Absolute Protection from Lightning is given by use of our continuous copper conductors.

E. G. WASHBURNE & CO.,
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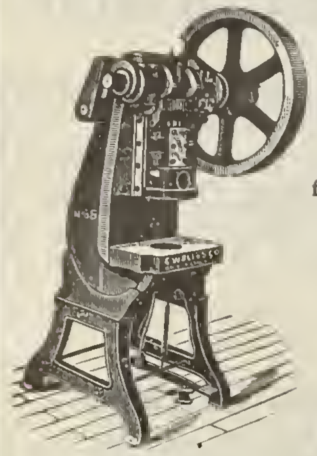
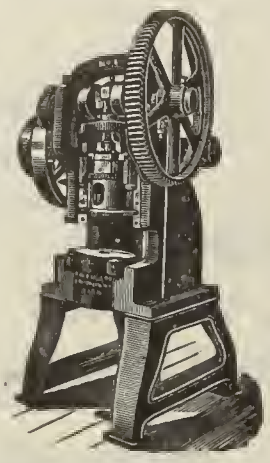
Telephone 25 Cortlandt.
Work put up or material furnished.

E. W. BLISS CO., BROOKLYN, N. Y., U. S. A.



"BLISS" DOUBLE-ACTION PRESSES.
Made in 5 sizes, weighing from 750 to 3,800 lbs.



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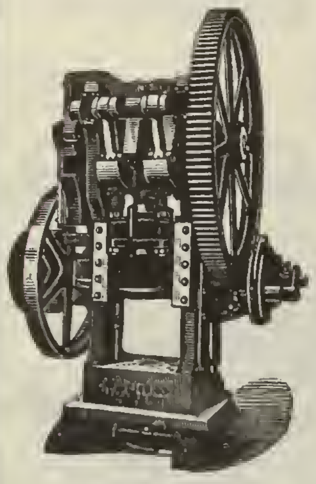
Made in 4 sizes, either with straight-sided or overhanging frame, weighing from 5,300 to 9,000 lbs.



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Made in over 15 sizes, weighing from 5,600 to 150,000 lbs.

PRESSES FOR ALL KINDS OF DRAWING OPERATIONS.

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We have been **AWARDED** the **GRAND PRIZE** at the **PARIS EXPOSITION** of 1900 for the **Unsurpassed Excellence of our Machinery.**

With our greatly increased foundry facilities we are now in a position to furnish a superior quality of castings in dry sand, green sand and loam, up to 30 tons in weight. We solicit orders for this kind of work.

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DROP HAMMERS
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N.W.
EMBOSSING
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N.E.
REDUCING
DRAWING
WEST ← **PRESSES** → EAST
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WE ARE SENDING THEM IN ALL DIRECTIONS.
Correspondence Solicited. **Estimates Furnished.**
Also Owning and Operating **The Stiles & Parker Press Co.**

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SKYLIGHT PATTERNS.
Made on Heavy Blue Print Paper.

Any tinner or cornice man, with a brake and a set of Perfect Skylight Patterns and chart, can make a **Hip Gable or Single Pitch Skylight.**

Write for illustrated Skylight Pattern Circular and Prices, also for blue print sample section of Hip and Gable Skylight. Address

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157, 159, 161 Oraton St.,
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Manufacturers of all kinds of
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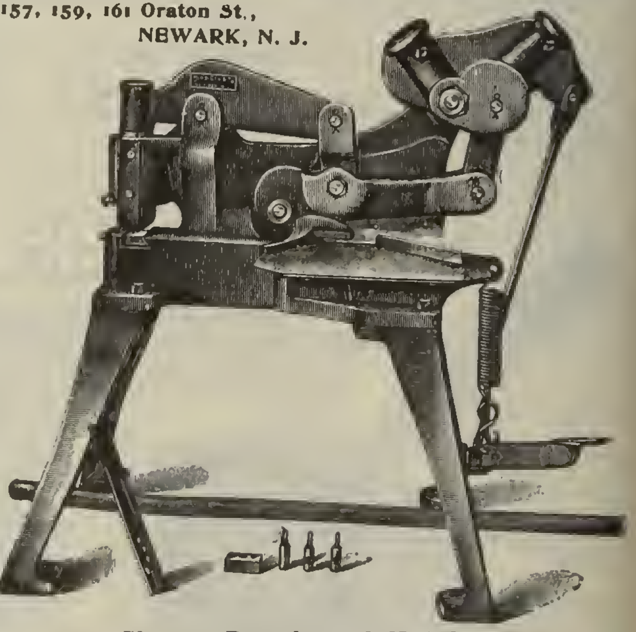
BRAKES,
(ALL SIZES).
Heavy and Light
Squaring Shears,
Punches, Presses, Sheet Steel Lath Machines, Drop Presses, Draw Benches, and ***Special Machinery*** of all descriptions



Shear, Punch and Notcher.

— WITHIN THE LIMIT.—"Look here!" cried the victim, "you said that house was just a stone's throw from the station."

"Well?" inquired the real estate agent.

"Well, the distance is half a mile at least."

"Is that all? Time and again I've seen a blast in a quarry that would throw stones upward of a mile."

— NOT LOADED FOR BEAR.—"Once when I was out for rabbits and not prepared for anything bigger," said the talkative sportsman, "I almost stumbled over a big black bear."

"I know what you're going to say," interrupted the scoffer.

"What?"

"That you realized at once what trouble was bruin."

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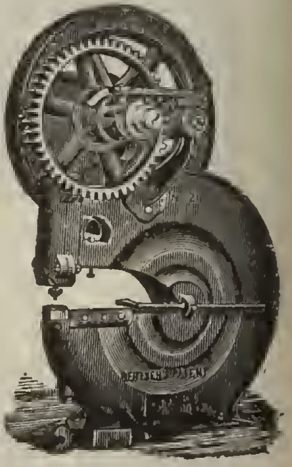
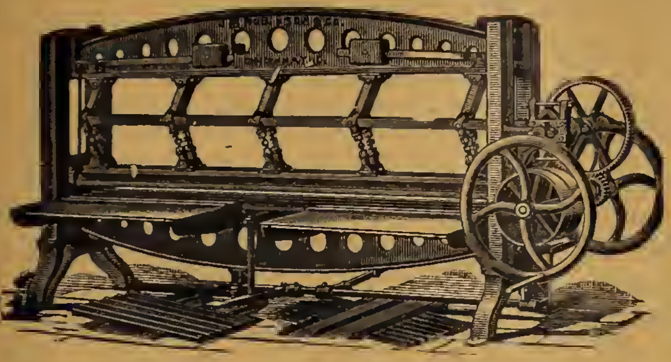
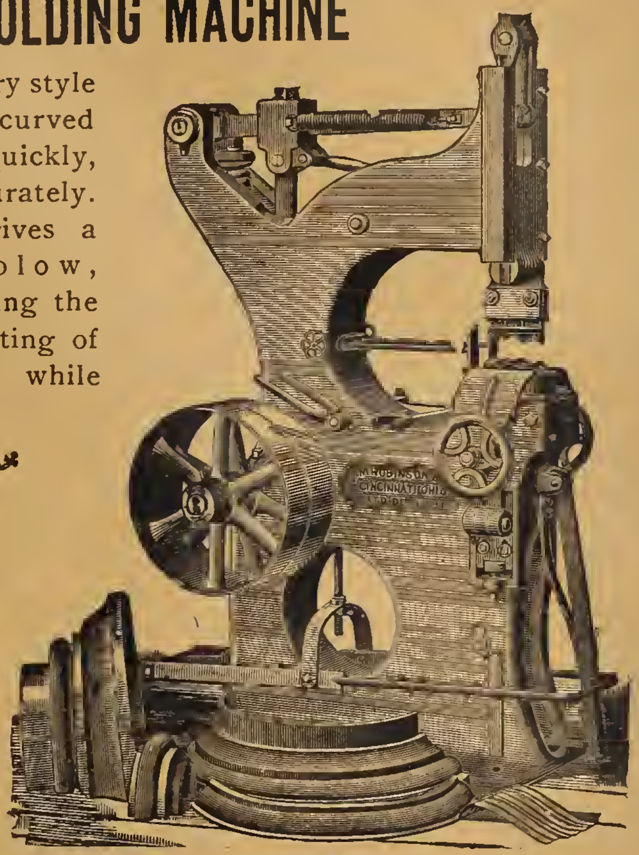
Cambridge City, Ind.
MFRS. OF
SHEET METAL WORKING MACHINERY
of every description.
Send for illustrated descriptive circulars and prices.



Agents: MERCHANT & CO., Philadelphia, Pa.





ROOFING AND BENDING MACHINE

With Dies suitable will form Sheet Metal Roofing, Siding, Ceiling, Weather-Boarding, Skylight Bars, Metal Lathing, Gutters, Ridge Caps, Escalloped Steel Sheets and Cattle Troughs. Will bend and form No. 10 gauge and lighter in 6, 8, 10 and 12 foot lengths.

CURVED MOLDING MACHINE

For making every style of sheet metal curved moldings quickly, cheaply and accurately. The hammer gives a perpendicular blow, entirely preventing the drawing or twisting of the material while being formed.

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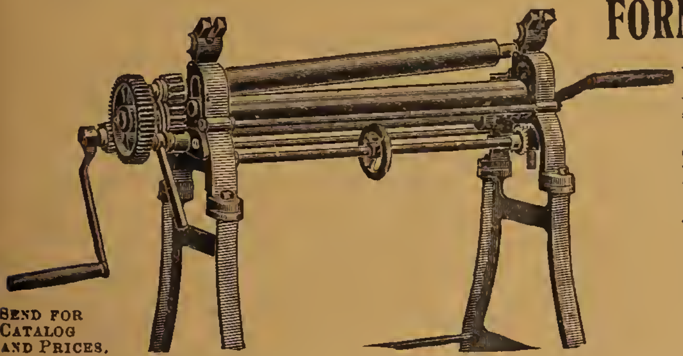
The J. M. Robinson Mfg. Co.,
CINCINNATI, OHIO.
Builders of Sheet Metal Working Machinery.

STOVE AND RANGE MAKERS'

Flanging Machine.

Machinery for the Production of Iron Roofing a specialty.

Geo. C. Keene & Co.,
CINCINNATI, OHIO.
Makers of the Keene Cornice Brake.



IMPROVED SLIP ROLL FORMING MACHINE,

With lifting device for upper roll. Single or double back geared. With or without legs. Arranged for both hand or power as desired.
We make a specialty of 24 to 30 inch Squaring Shears

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1073-1075 Clark St.,
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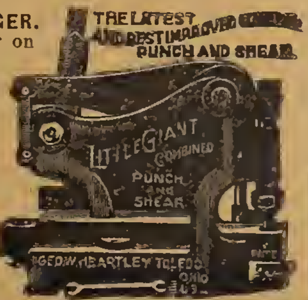
THE LATEST AND BEST IMPROVED COMBINED PUNCH AND SHEAR.
LITTLE GIANT
COMBINED
PUNCH AND SHEAR
GEO. W. HEARTLEY TOLEDO OHIO

HEARTLEY MACHINE, VARIETY IRON AND TOOL WORKS.

MANFRS. OF
HEARTLEY'S STEEL TRUSS BRACE EAVE TROUGH HANGER.
Saves 4 lbs. of solder and one half-day's labor on each gross used. We also make the Baker & Woodruff Hangers. Conductor Hooks, Ice Tongs, and Tools. Special Machinery and Tools for patent specialties and novelties, Bicycle and Metal Wheel Tools.
POWER AND HAND PUNCHING AND SHEARING MACHINERY.
Presses, Punches, Dies and Tools for sheet metal stamping and forming, etc.
GEO. W. HEARTLEY, Proprietor.
Jobber in Eaves Trough, Conductor Pipe and Tinners' Trimmings.
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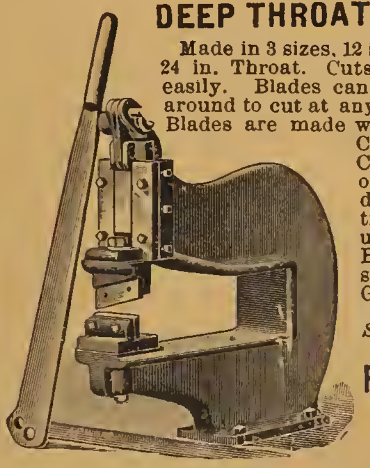
No solder is required to fasten the Cross Bar to this Eaves Trough.



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Made in 3 sizes, 12 in., 18 in. and 24 in. Throat. Cuts No. 14 Iron easily. Blades can be swiveled around to cut at any angle. The Blades are made with a Double Cutting edge. Can be turned over when dull. For cutting out Irregular Shapes or Holes in large sheets, is a Good Machine

Send for prices

R.M. Clough,
TOLLAND,
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20th Century Groover
for **Hand Power.** We also make them for **Belt Power.**

20th CENTURY GROOVER. Handiest out.
Operated from one position. Automatic knock-out and *Quick Return*. Grooves 22 gauge.
Write for circular. Made by
W. A. WHEELER, Indianapolis, Ind.

In Their Own Tongue.—English Guide: "The echo 'ere in these mountings is very fine, sir."

Tourist (after shouting "Hello!"): "Huh! There is an echo, but it isn't at all intelligible."

English Guide: "Oh! you don't understand the languidge, sir. These are Welsh mountains, you know."—*Exchange.*

— Productive.—"Is the ground around here very fertile?" asked the visitor.

"Well," answered Farmer Corntossel, "us reg'lar agriculturists can't seem to do much with it. But some o' these here real estate companies have managed to raise two or three crops o' buildin' lots off'n it."—*Washington Star.*

— Absolute.—Tom: "Why shouldn't I feel blue. She has refused me."

Dick: "Don't be discouraged. A woman's 'No' often means 'Yes.'"

Tom: "A 'No' might, that's true, but she said 'Nit!'"—*Exchange.*

Right Hand Ranges

The position of the hot water boiler or the arrangement of the kitchen often makes it desirable to use a

Right Hand Fire Box Range

instead of the ordinary style. Our Novel and Acme Bay State Ranges are especially adapted for such cases.

Barstow Stove Company,

NEW YORK PROVIDENCE. BOSTON.

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Townsend Building,
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Manufacturers of Tin and Terne
Plate, Black Plate, Sheet Iron
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LIGHT DARK ROOMS.
The only cost is the first cost.

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Dunbar Foundry Pig Iron.
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American Sheet Iron Co.'s Sheet Iron.
American R. G., cleaned of uniform black color.
Dealers in all kinds of Iron and Steel Scrap.

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186, 188 & 190 Water Street, and
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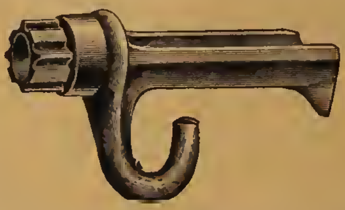

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Are made open or closed, and a full line of other Maple Sugar goods. Send for dealers' price list.

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HUB

If you want the best line; the line with the **most attractive** and progressive selling features, look into the merits of the

Hub
Line of Ranges.
Steam and Water Heaters;
Hot Air and Combination Furnaces.

SMITH & ANTHONY CO., Boston.

Building a Business

on meritable goods is the motto of the man who handles the Glenwood line. He knows their reputation and quality. He knows that every part of a Glenwood range or heater is fitted and finished like a piece of machinery. He knows that every Glenwood sold means a satisfied customer—that's why it's business and a pleasure to handle

GLENWOODS.

Write the Weir Stove Company, Taunton, Mass.

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Our Various Brands:
ADMIRAL,
FORT PITT,
FREEHOLD,

Are made from strictly New Metals and the Proportions Guaranteed.

McCLURE & CO.,
Manufacturers of Tin Plate,

PITTSBURGH, PA.,
211, 213 and 215 Second Ave.

PHILADELPHIA, PA.,
115 North 7th Street.

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The Metal Worker

A WEEKLY JOURNAL OF THE ROOFING, STOVE, CORNICE, TIN, PLUMBING AND HEATING TRADES.

With which is Incorporated The Stove and Tin Trade Journal, the Sheet Metal Builder, and Metal.

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NEW YORK AND CHICAGO, APRIL 19, 1902.

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PIPE WRENCH.
th a GRIP that GRIPS without
Marring the Pipe.
1 Grips up to 1 Inch. No. 2 Grips up to 2 inches.

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CATALOG
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ENGINEERS'
AND
STEAM
FITTERS'
TOOLS
WILL
INTEREST
YOU.

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The Gorton Side Feed Boilers
FOR STEAM AND HOT WATER HEATING.
INVESTIGATE FOR YOURSELF.
Send for Catalogue and Prices.
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AMERICAN STEAM and ALTITUDE GAUGES, POP SAFETY VALVES.
Heating Specialties. American Steam Gauge & Valve Mfg. Co., Bismark St., Boston, Mass., U. S. A.

Don't Take any Chances

when figuring on a hot water or steam job. Put in a boiler that you know will be certain to do the work. **Paragon Boilers** are the result of more than 40 years' experience in the heating business. The ratings are absolutely correct, the boiler is built right, and the price is right. Send for catalog and discounts to the trade.

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ALVANIZED IRON

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refractory iron.
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A coal dealer told one of our customers if he would quit handling

Stewart Stoves

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Write for prices to John Sommer's Son, 355-365 Central Ave., Newark, N. J.

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GLOBE and ANGLE VALVES, IRON and BRASS.
All working parts renewable without taking the valve from piping. All parts interchangeable. Guaranteed not to leak at high pressure. Send for circular.
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Jenkins Bros.' Valves
are manufactured of the best steam metal, and are fully guaranteed. Why experiment with cheap valves? If you want the *BEST* ask your dealer for valves manufactured by Jenkins Brothers. Remember all genuine are stamped with Trade Mark like cut.
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FOLLANSBEE BROTHERS CO.,
328-330-332 Second Ave.,
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Galvanized and Black Sheets.
Sheet Copper, Conductor, Eave Trough.

Our sales of
Follansbee Pure Iron Old Style
increasing wonderfully; it
is Iron Base, not steel.
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and other Tin Plates.

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Page 10.
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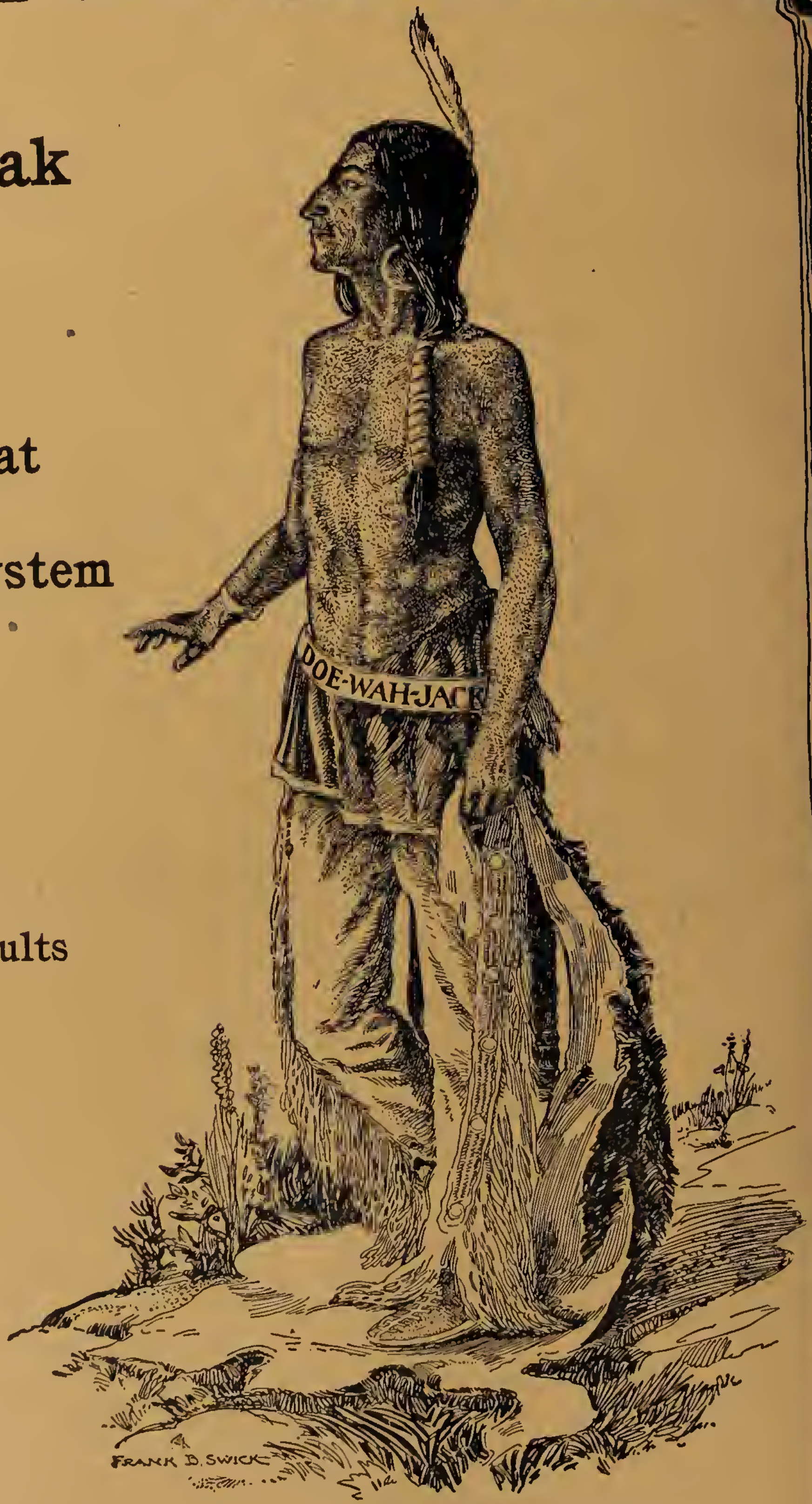
The Round Oak System

of Heating School Houses with Furnace Heat is a Common Sense System

It is successful for that reason.

We are ever ready to make plans for our customers and to guarantee results when our plans are faithfully carried out.

What we make we make good and we make "furnace plans" the same way.



A Common Sense View

Estate of P. D. Beckwith

Makers of Good Goods Only
Dowagiac, Michigan

Rogers & Wells Chi.
F.B.S.

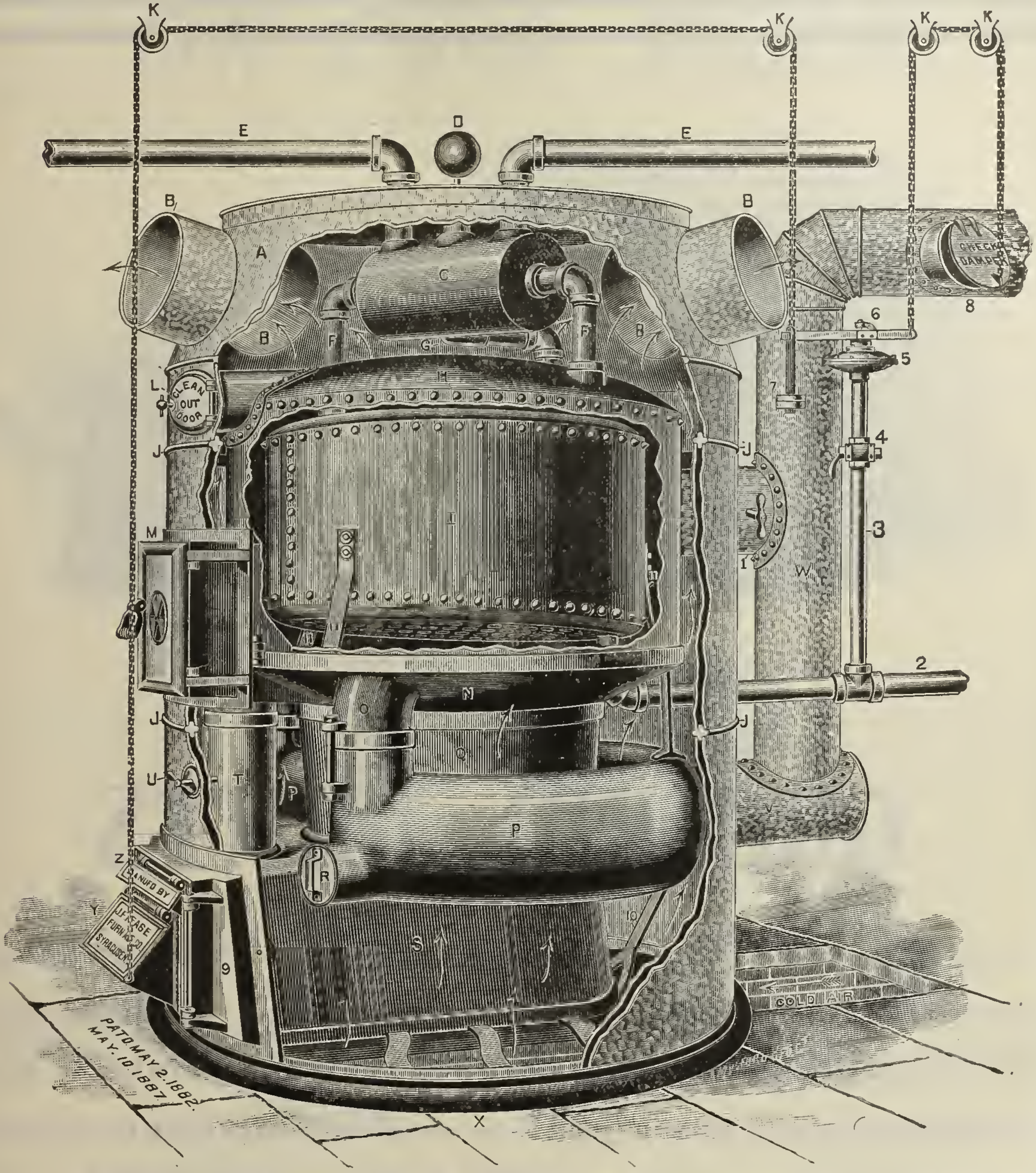
Different People
Look at Different Things
Differently.

But Every Intelligent Man
Knows that it is Wiser
To Sell Good Goods.

THE PEASE-ECONOMY COMBINATION

For Steam and Warm Air.

IS A THOROUGHLY RELIABLE APPARATUS



LOW DOWN PATTERN.

The Economy Combinations were First in the Market.
There have been more of them sold, by far, than of all other makes put together.
In their present improved form they very closely approach perfection.

NOT EXPENSIVE, EITHER.

CATALOGUE OF OUR ACETYLENE GAS MACHINE WILL INTEREST YOU.

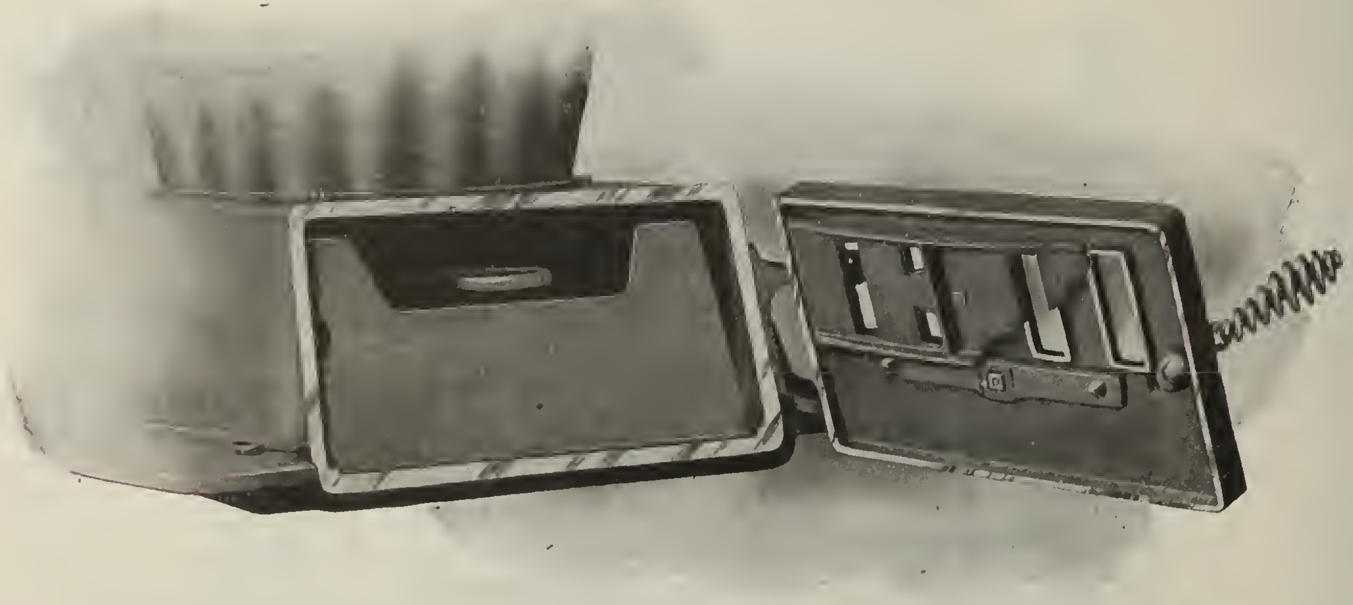
International Heater Co.,

UTICA, N. Y.

BOSTON. NEW YORK. CHICAGO. DENVER.

LARGEST MAKERS OF HEATING AND LIGHTING APPARATUS IN THE WORLD.

Moore's Air-Tight



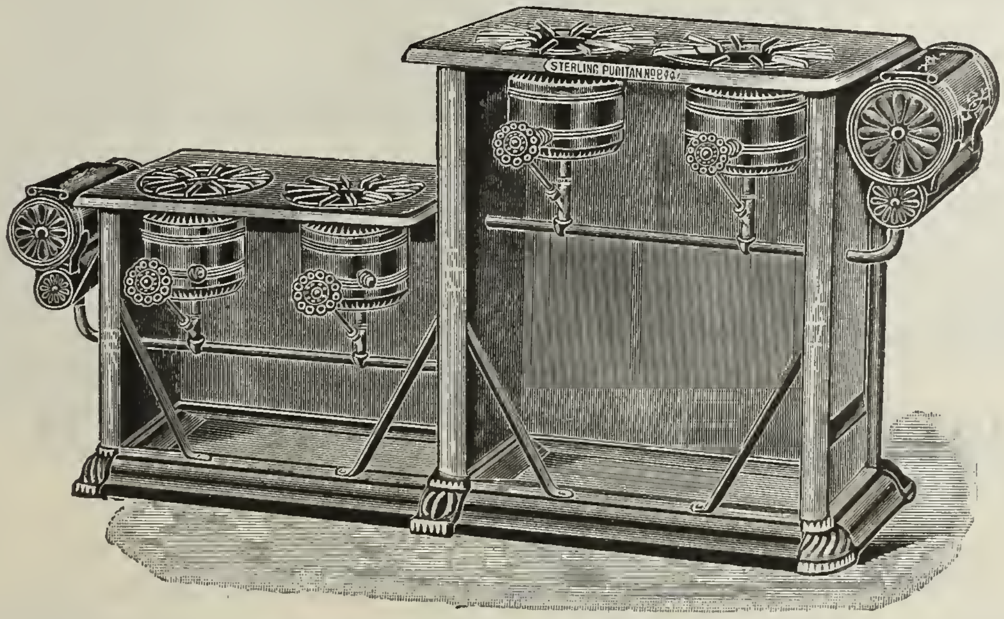
GROUND JOINTS

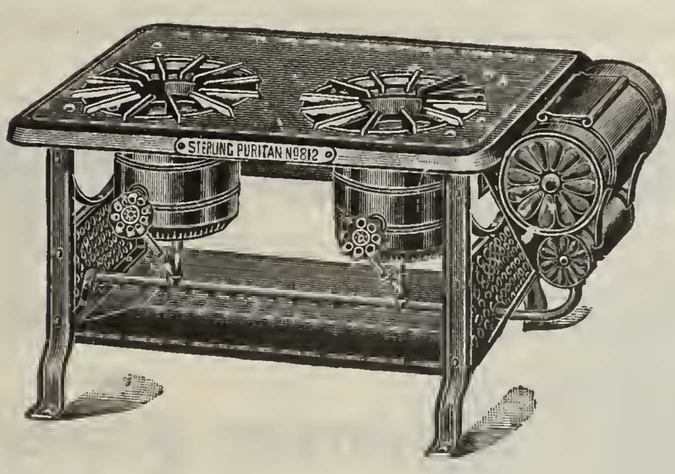
"Ground to a Fit." That's what happens to the Draft Door joints of Moore's Air-Tight Heaters. The peculiar construction of the base and door is such as to make it possible to subject every joint to mechanical grinding, and to obtain an actual contact to within *1-1000* of an inch.

That's why the name *AIR-TIGHT*, when applied to *MOORE'S HEATERS*, stands for *Something Definite.*

JOLIET STOVE WORKS,
JOLIET, ILLINOIS.

Sterling-Puritan Wickless-Blue Flame Oil Cook Stove.





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FROM THE

ORIGINAL MAKERS.

NO IMITATION IS AS GOOD.

70,000 made and sold in 1901.

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THE CLEVELAND FOUNDRY CO.,

CLEVELAND, OHIO., U. S. A.

BRANCHES:

CHICAGO, 69 Lake St. **SAN FRANCISCO,** 132 Market St. **PHILADELPHIA,** 46 N. 2nd St.

MARION CINDERELLA
CLEANOUT
THE PITTSBURGH STOVE & RANGE CO.

Cinderella

Steel Ranges

REPRESENT

The Best Materials,
The Best Construction,
The Best Workmanship

THEY ARE

The American Standard for Excellence.

ALL STYLES AND SIZES AT
MODERATE PRICES.

We would be pleased to send our catalogue.

STOVES AND RANGES CINDERELLA NEVER FAIL

PITTSBURGH STOVE & RANGE CO.,
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STOVES AND RANGES CINDERELLA NEVER FAIL

WESTERN SALES AGENT,
W. D. Sager, 38 and 40 Michigan St., Chicago, Ill.

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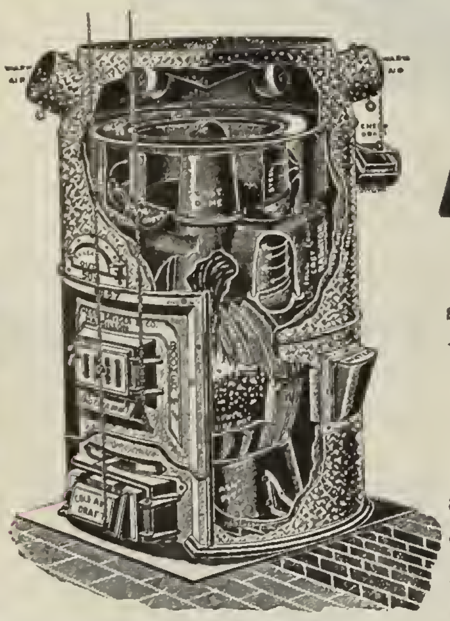
REGARDING

Boomer Furnaces.

OR

Boomer Steel Ranges



We want to state in strongest terms possible that if you want the
HEAVIEST,
MOST DURABLE,
MOST ECONOMICAL
and easiest to take care of Furnace or Steel Range, buy a **BOOMER.**

Boomer Furnace.

Neither time nor money is spared to make them the Best.
Buy Boomers and save your coal bills.
We invite investigation.

Boomer Steel Range.

THE HESS-SNYDER CO.,
Manufacturers, MASSILLON, O.

CITY BUCKEYE RANGE.

For Hard, Soft Coal, Wood or Coke.

MADE IN 17 AND 19 INCH OVEN.

Square Top and Bracket Reservoir Fitted with Water Heater.

AN ATTRACTIVE PIECE OF GOODS AND . . .

A Ready Seller.

Write for Descriptive Catalogue and Prices.

OHIO STOVE CO.

Portsmouth, Ohio.

WROUGHT STEEL

RANGES

LIKE THE

"PACIFIC"

Are best because they're made stronger, better, more perfect than any other similar construction. You should write for prices and secure our Catalogue.

It is made with High Closet, Rolling Front, Six Holes, for Hard or Soft Coal; is the latest, best and handsomest Steel Range ever offered, one that you can offer as simply "out of sight" compared with that sold by the peddlers. Try it.

...THE...

JOHN VAN RANGE CO.,

Warerooms:—419 ELM ST.,

Factories:—6-8-10 and 12 HOME ST.,

CINCINNATI, O.

THE JOHN VAN RANGE CO CINCINNATI, O
PACIFIC
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PACIFIC RANGE. PAT AUG 12 1873. PAT SEPT 26.82.
THE VAN RANGE CO CIN'TI. O.

OUR

CATALOGUE,

SHOWING

GAS RANGES
CAST RANGES
STEEL RANGES
STEEL COOKS
HOT PLATES
CAST and STEEL HEATERS

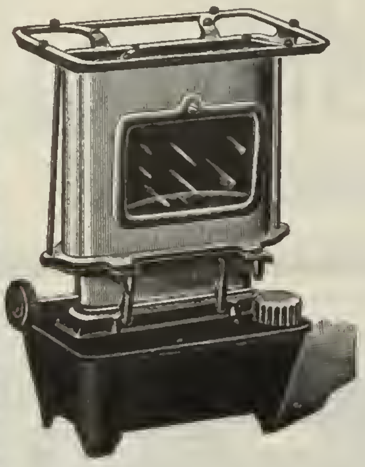
WILL BE FURNISHED FOR THE ASKING BY

Enterprise Stove Co., VINCENNES, IND.

THE TAYLOR & BOGGIS FOUNDRY CO.,

MANUFACTURERS OF

LIGHT GRAY IRON CASTINGS.



Builders' Hardware,
Dampers, Oil and Gas Stoves.
Furnace Lamps,
Molasses Gates,
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Hardware Specialties.

CLEVELAND, O.

"Hudson" Design.

REFRIGERATORS,
BLUE FLAME OIL STOVES,
GASOLINE STOVES.

LARGEST JOBBERS
in
NEW ENGLAND.

GAS RANGES,
FURNACES, STOVES,
RANGES AND REPAIRS.

HENRY N. CLARK CO., 56 and 58 UNION ST., **Boston, Mass.**

BRAND STOVE CO.

STOVES, RANGES and FURNACES.

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MILWAUKEE, WIS.

MILLER

STEEL PLATE RANGE

WITH Improved Removable Duplex Grate, Improved Water Back for heating water, Flue, lined with Pure Asbestos Board, New Non-Warping Oven Bottoms, Cold-Handled Gravity Latch, Drop Oven and Feed Door, Patent Double Centers, Regulating Damper, Nickel-Plated Towel Rod. All bright parts Nickeled instead of Polished. Nickel Bands on doors are ventilated to prevent tarnishing, and body of Ranges are highly finished.

WRITE FOR CATALOGUE AND PRICES.

**The WM. MILLER
RANGE AND FURNACE CO.,**
CINCINNATI, O.

We Do Not Claim Everything,

HERO STEEL RADIATOR.

But all that we *DO* claim
is based on *HARD FACTS !*

SOME OF OUR CLAIMS :

We make *Warm Air Furnaces* in *Great Variety*, adapted to *all sections*, and to meet all *reasonable* price requirements. *Our Furnaces* are as *substantial*, as *powerful*, as *economical*, and as generally *satisfactory* as any others in the market.

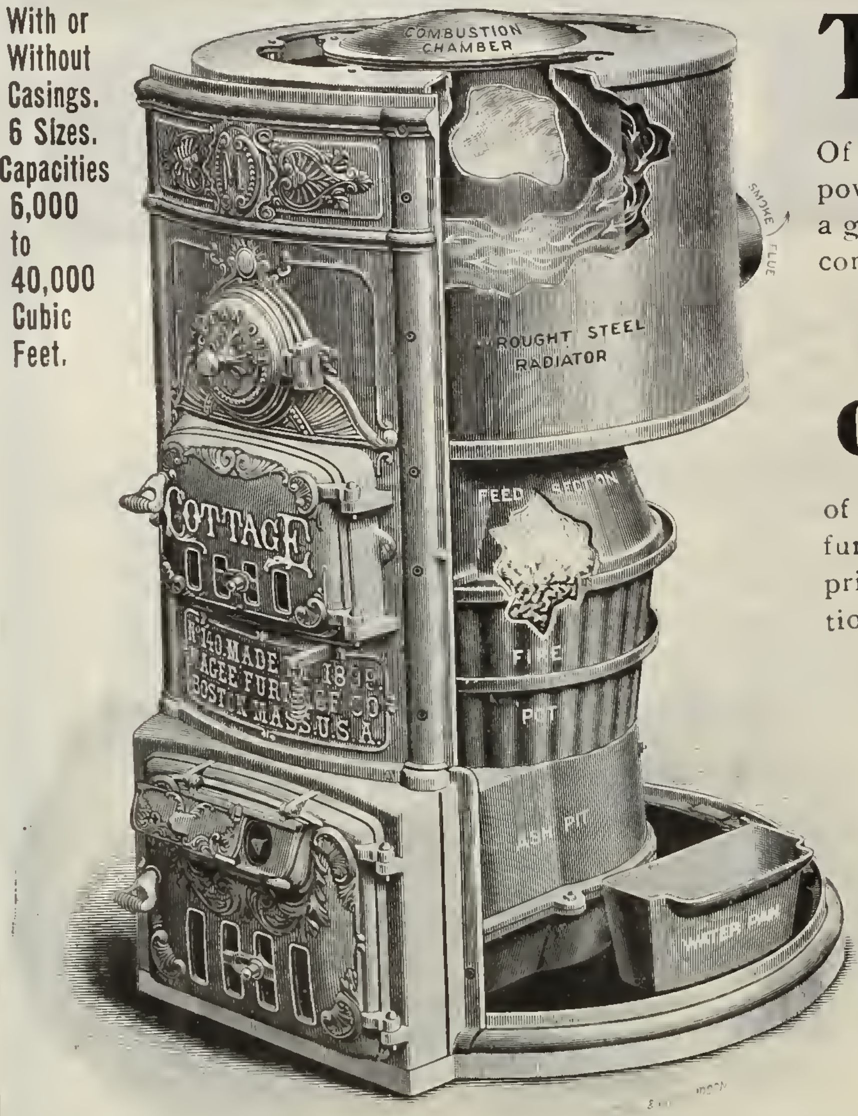
PARTICULARS GLADLY FURNISHED.

THE GRAFF FURNACE CO.,

MANUFACTURERS,

208 Water Street, NEW YORK.

With or Without Casings. 6 Sizes. Capacities 6,000 to 40,000 Cubic Feet.



The Best Test

Of a furnace, with reference to its heating power, is the amount of space it will heat with a given amount of fuel under a proper state of combustion. We make the distinct claim for our

Magee Cottage Furnace

of superiority in this respect over any and all furnaces where a high grade furnace at a low price is desired. It is not offered in competition with inferior grades, designed especially for the cheapest class of work, but is a construction from which the greatest amount of heat can be obtained from the least amount of fuel, and at the same time add to your reputation.

Send for Catalogue.

Magee Furnace Co.,
BOSTON.

Most complete line under one name in the United States.

IF YOU ARE NOT SELLING THE

Peck=Williamson Underfeed Furnace

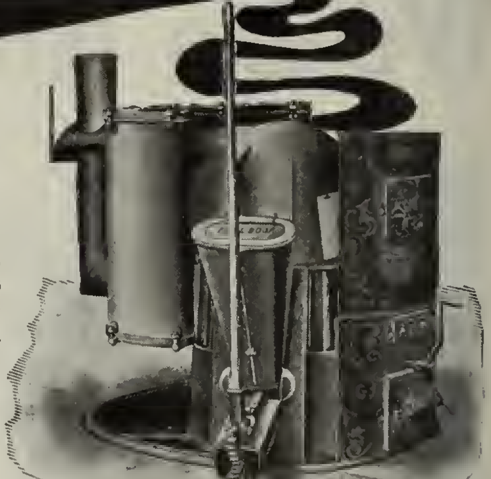
you have not the trade and are not making the money you might Just a pull or two of the lever feeds the new coal from underneath.

The Underfeed Furnace consumes less fuel than any other furnace ever built. The coal is burnt more slowly. All the heat units from it, as well as from the smoke, are utilized and all smoke eliminated.

Our handsome booklet explains its splendid heating qualities and coal saving.

You may have this booklet and our special plans for selling. Ask for booklet about our Laundry Dryer also.

THE PECK-WILLIAMSON COMPANY,
CINCINNATI, OHIO.



Your Guarantee is Good,

If backed up by our line. We make many kinds and sizes of steam and hot water boilers, and you as a dealer ought to know all about this line. Let us send you our printed matter and post you on the standard line. Write to-day.

KEWANEE BOILER COMPANY
KEWANEE, ILLS.

THE H. B. SMITH CO.,
WESTFIELD, MASS., U. S. A.

Catalogue furnished only upon application to
Heating Contractors, Engineers and Architects
92 Pages. Size 9 x 12 Inches.

COTTAGE
BOILERS.

STEAM BOILERS (8 SIZES), 550 SQ. FT. RADIATION SUPPLIED.
WATER BOILERS (8 SIZES), 900 SQ. FT. RADIATION SUPPLIED.

PACIFIC COAST AGENTS
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BREMEN AND NEW YORK CITY.

SALESROOMS :
THE H. B. SMITH CO.,

133 CENTRE STREET,
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510 ARCH STREET,
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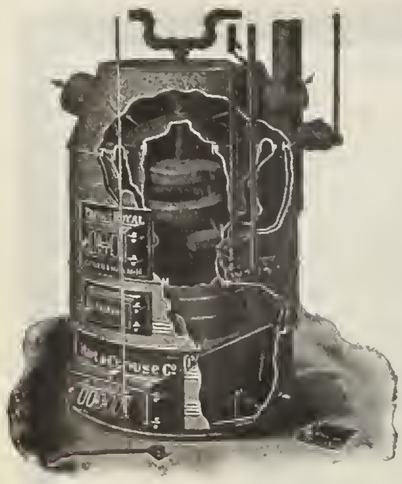


Royal Heaters.

HART & CROUSE CO.,

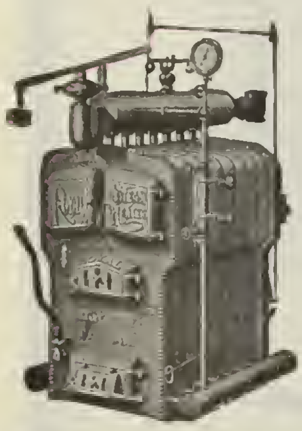
235 Water St.,
New York.

78 Lafayette St.,
UTICA, N. Y.

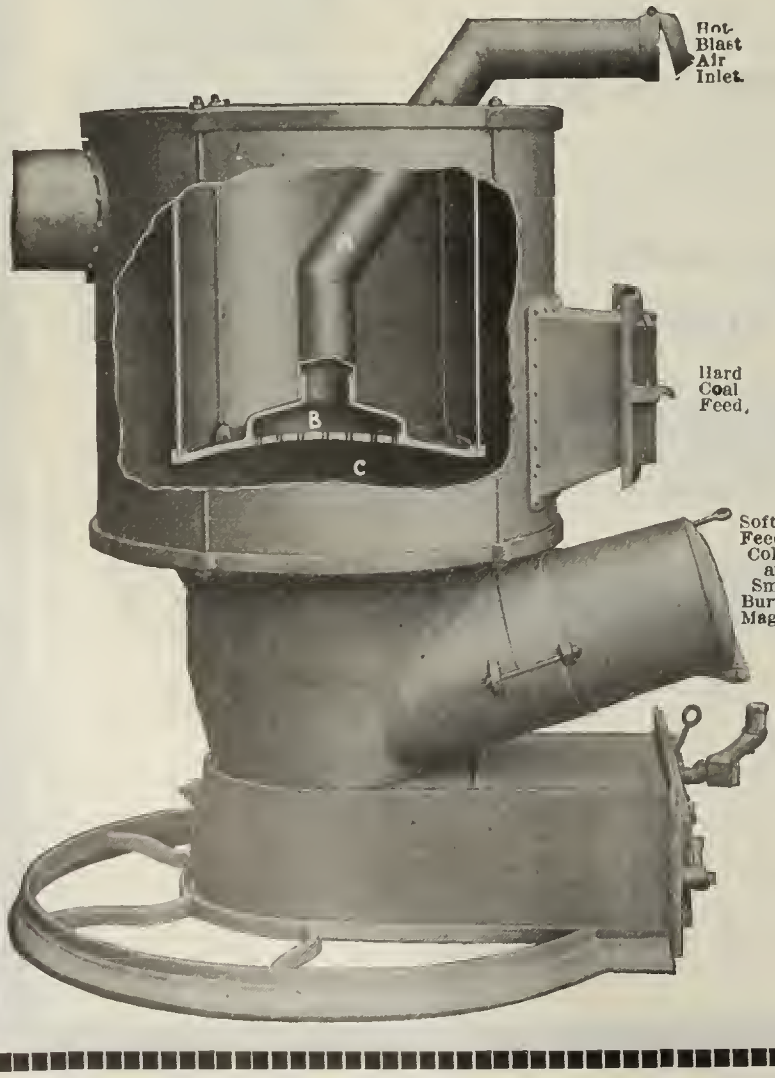
79 Lake St.,
Chicago.

The Leading Line of Heating Apparatus.

HOT WATER,
STEAM,
HOT AIR.



THE PATRIC FURNACE.


Hot-Blast Air Inlet.
A
B
C
Hard Coal Feed.
Soft Coal Feed and Coking and Smoke Burning Magazine.

HAS

TALKING POINTS

OF MERIT

FOR THE DEALER.

SIMPLICITY.

In construction the Patric Furnace is exceedingly simple. This point always appeals to the prospective purchaser. No clogged radiator. It needs no clean-outs. Look at the illustration and see for yourself.

DURABILITY.

This is one of our hobbies. The Patric Furnace is noted for its durability. One man writes that his furnace has been in use every winter since 1873, twenty-nine years, and still heats as well as when it was first put in. Good materials account for that. We use them now and always have.

SMOKE-BURNING and COKING MAGAZINE.

Here's where we have a winner. It is a scientific feature that sells lots of Patric Furnaces. Used only on the Patric. A success for the past 17 years. Highly recommended by our customers. Cokes the coal and burns the volatile parts of the smoke and gases. A great talking point.

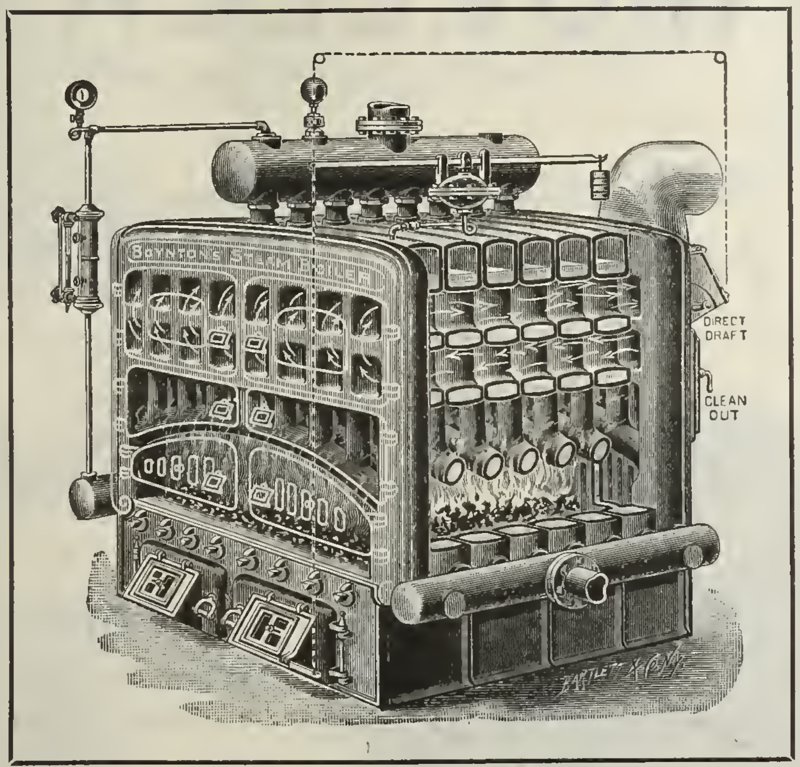
OUR HOT-BLAST.

Our hot blast device for aiding combustion delivers heated air directly into the combustion chamber. No part in the fire to clog or burn off. Your customers must have a hot-blast.

Send for catalogue, price-list and discounts to dealers.

THE PATRIC FURNACE CO.,
SPRINGFIELD, - OHIO.

THERE'S NOTHING OVERLOOKED IN THE MAKE-UP OF OUR BOILERS



THE BOYNTON FURNACE CO. TRADE MARK EST 1849 INC 1884

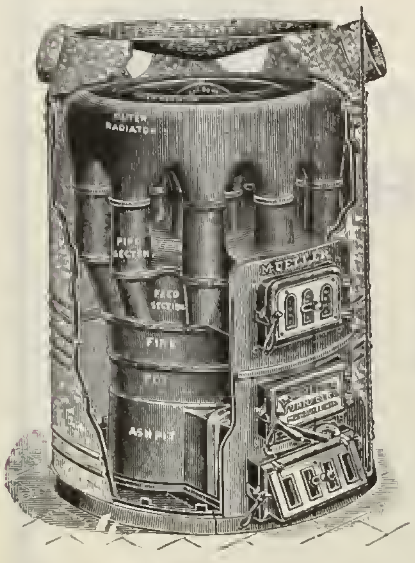
Every mechanical improvement of the alert and progressive American is represented in their construction.

Its users are of the class who know a good thing.

Repeated orders our best recommendation.

Information and Prices on Application.

The Boynton Furnace Co.
NEW YORK CHICAGO



Established 1857.

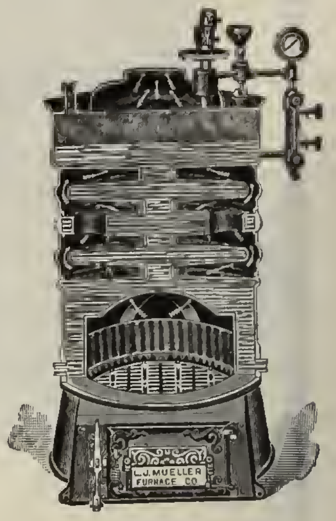
ATTENTION.

If you are looking for the
Agency of a first-class line
of Furnaces and Boilers
HOW ABOUT THE

MUELLER?

SUCCESSFUL WHEREVER USED.

Write for Catalogue and Prices.


L.J. MUELLER FURNACE CO.

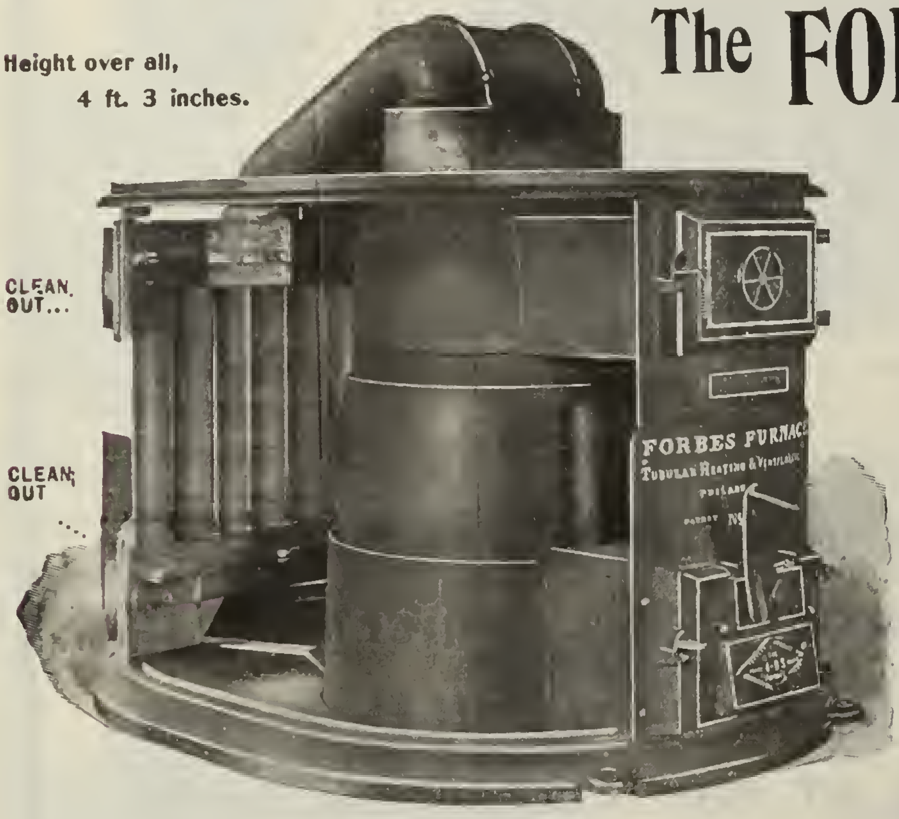
EVERYTHING IN THE HEATING LINE.

L. J. MUELLER FURNACE CO.,
190 REED ST., MILWAUKEE, WIS.

Height over all,
4 ft. 3 inches.

CLEAN OUT...

CLEAN OUT...



The FORBES FURNACE.

You run no risk in putting in the

Forbes Furnace.

When properly installed we guarantee them in every case.

They are constructed entirely of cast iron.

No sheet iron drums.

Our radiating tubes are 1/8 in. thick, and will wear for years.

Specially suited for low cellars.

SEND FOR CATALOGUE AND FULL PARTICULARS.

Tubular Heating & Ventilating Co.,
228 Quarry St., Philadelphia, Pa.

FURNACES

EXCELSIOR HEATING SPECIALTIES

PIPE

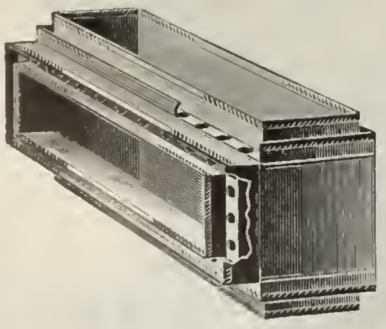
WE ARE MAKING

Very Low Prices

on our full line for present and future deliveries and solicit

Your Inquiries

Our Stove Pipe and Elbows, also Furnace Pipe are the Best made.

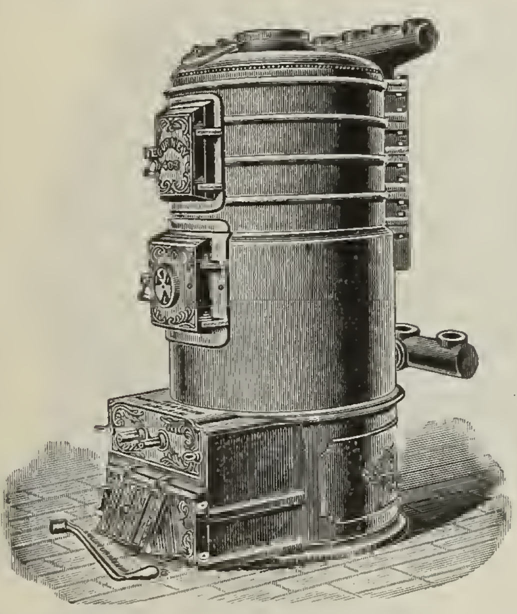


THE EXCELSIOR PARLOR ELBOW.

ELBOWS

EXCELSIOR STEEL FURNACE CO.
38-40 W. MONROE ST.-CHICAGO.

REGISTERS



Never Over-Rated. . . .

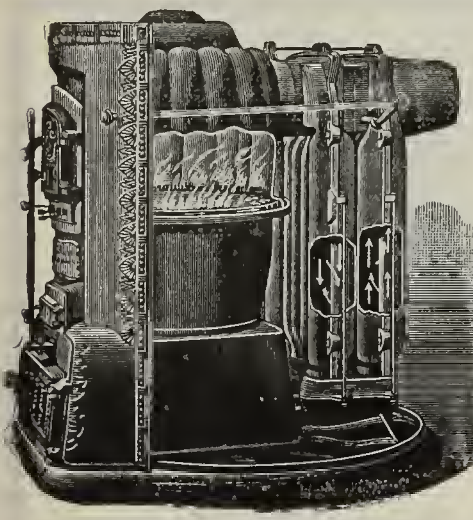
GURNEY HEATERS are never over-rated, neither in the estimation of the public nor in our claims for them. They will do exactly the work we say they will do. We declare that **GURNEY HEATERS** have no equal for efficiency, durability and economy. On account of the excellence of their construction they will maintain temperatures longer and require less fuel.

Do you not wish to handle the best? Write us for catalogues, etc.

GURNEY HEATER MFG. CO.,

74 Franklin St., Boston. 111 Fifth Ave., New York City.

Western Selling Agents, James B. Clow & Sons, Franklin
and Harrison Sts., Chicago, Ill.



Bengal Furnace

It is totally unlike any other, — a brand new idea in the radiation of hot air. The BENGAL is bound to supersede the old style drum furnace as surely as electric light has gas. And the sooner you investigate the matter the better for your business. Full particulars on application.

EASTERN SELLING AGENTS:
GURNEY & CO.,
Washington, Hanover and Elm Streets, Boston, Mass.

FLOYD, WELLS & CO., Royersford, Pa.

NEW YORK OFFICE, 210 WATER ST., R. W. HILLMAN, Manager.

The Robinson Tubular Warm Air Furnaces

give universal satisfaction where-ever used

They are up-to-date in every respect and have many special features not found in other furnaces.

WRITE FOR CATALOG.

ROBINSON FURNACE CO., Chicago.

STOVE REPAIRS

Bought from us entitle the purchaser to a 1000 mile book *Free*, on any railroad. Have you received one of them?

CHAS. C. HEATH & CO., Philadelphia and Baltimore.

Write us for particulars.

HOT WATER AND HOT AIR

HEATING BY COMBINATION STOVES AND FURNACES.

Suitable for Large or Small Houses, Stores, Conservatories, Barber Shops, Hotels, etc., etc.

Heat Water Quickly.
Circulation is Positive.
No Joints Inside to Leak.

THE NATIONAL PIPE BENDING CO
160 RIVER ST., NEW HAVEN, CONN.

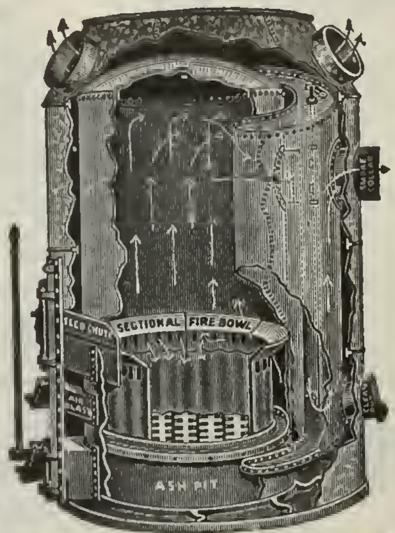
STAMFORD FOUNDRY COMPANY

MAKERS OF

RANGES COOKING AND HEATING STOVES
HOT-AIR AND COMBINATION AIR AND WATER FURNACES
LAUNDRY STOVES CONFECTIONERS' STOVES
CABOOSE RANGES ETC ETC

STAMFORD CONN

The Torrid Zone Furnace



is a trade winner because it has points of merit peculiar to itself that can be found in no other steel furnace. Our new catalogue is now ready to mail and a description of our Hot Air and Hot Water Combination Furnace can be seen in it. We furnish either the cast iron lining or the fire brick at the same price. Our Wood Furnace is called a powerful heater by those who use it.

CATALOGUE FREE.

Lennox Manufacturing Company,
Eighth Ave. and Frederick St.,
MARSHALLTOWN, IOWA.

GLENDALE Stoves and Ranges

Manufactured by
SOMERSET STOVE FOUNDRY CO.,
SOMERSET, MASS.
Send for catalogue.

Portable OVENS
FOR
CORE BAKING,
JAPANNING,
ENAMELLING, Etc.
OVENS FOR Bakers, Confectioners, Hotels, Etc
Made in all sizes, single and double, for coal, wood, natural or artificial gas.
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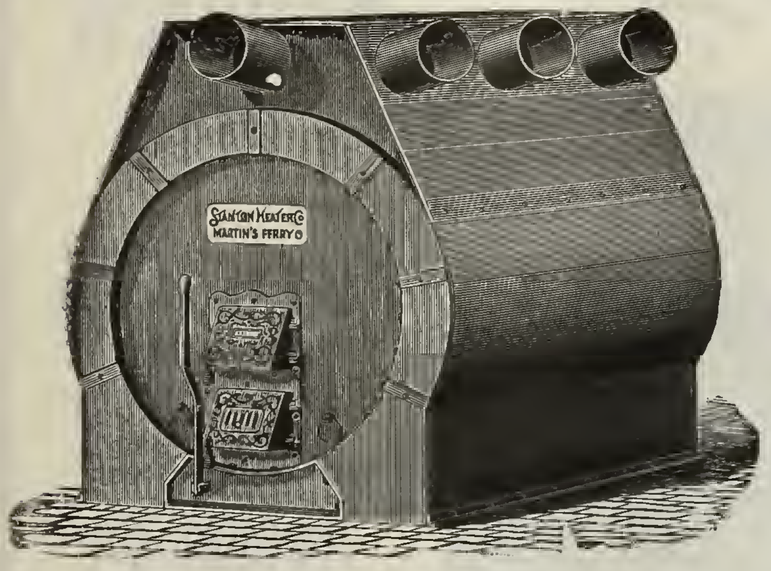
The G. S. BLODGETT CO., Burlington, Vt., U. S. A.

SCRANTON CORUNDUM & EMERY WHEEL CO.
1311-1315 Capouse Avenue, SCRANTON, PA.
Write for Catalogue.
OUR "BLACK DIAMOND"
artificial abrasive wheels are especially adapted for
The Stove Trade
THEY ARE THE BEST.

PATENTED
JULY 19, 98
BRIEN HEATER CO. HOOSICK FALLS N.Y.

Brien Heater.
A perfect, all cast WOOD or COAL burner. There is no other Hot Air Furnace as low down as the "BRIEN."
Write for territory, catalog and prices.
BRIEN HEATER CO.,
HOOSICK FALLS, N. Y.

The Stanton Seamless Heater,



PORTABLE CASED.

CADIZ, OHIO, June 18th, 1900.

GENTLEMEN:—We had a Stanton Furnace No. 84 put in last Fall and have nothing but praise to say of it. The space heated is 50,400 cubic feet, which it keeps comfortable in the coldest weather. Our fuel costs only one-fourth what it used to and besides is perfectly clean. We take pleasure in recommending it. Respectfully,

J. EHRHART, Hotel Ehrhart.

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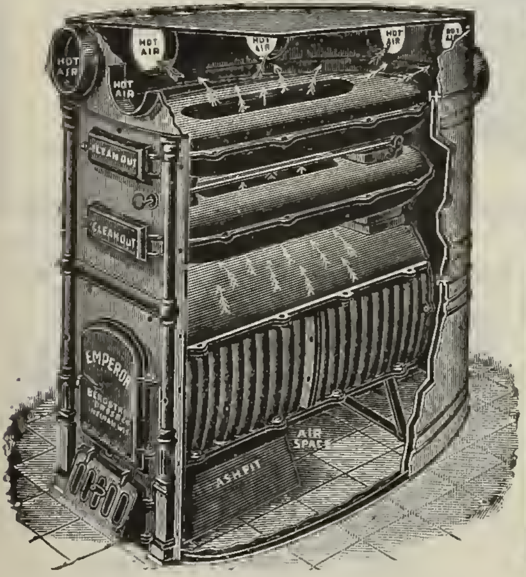
THE STANTON HEATER CO.,
Martin's Ferry, Ohio.

See Our Advertisement Next Week.



Emperor Furnaces
FOR WOOD.

Simple, Safe, Durable. Economical in Fuel.

The Best and Cheapest Line of Wood Furnaces. . . .
Furnished for either Brick or Galvanized Iron Ca·ing

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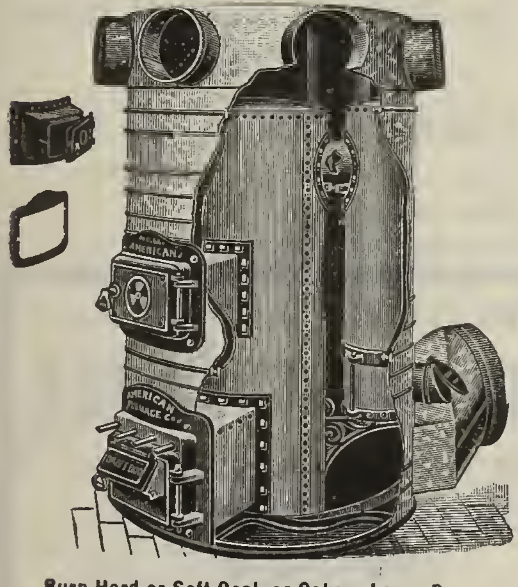
Bergstrom Bros. Co.

NEENAH, WIS.



Some Ripe Experience

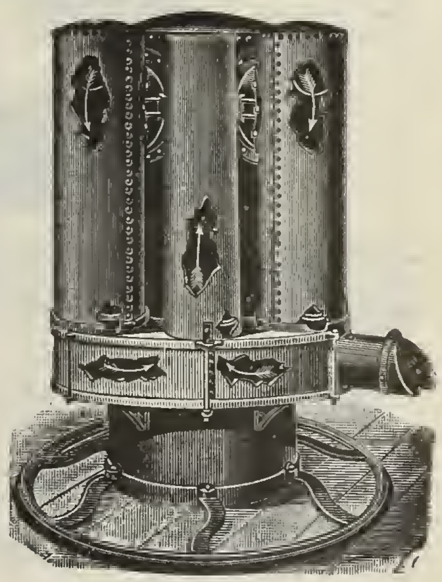
Has come to us through watching the doings of dealers throughout the United States.

We find that the dealer who sells cheap furnaces not only loses ground in the furnace business but also has a falling off in his other lines.

On the other hand, we can say that the man who sells a good furnace and charges enough to do a good job will, in a few years, be the leading furnace man in his town and at the same time build up his other business.

The ***American Furnace*** is made for the better class of trade; is durable, clean and economical in fuel.

The American Furnace Co.,
1911-13 PINE STREET, ST. LOUIS, MO.



Burn Hard or Soft Coal, or Coke. Large Doors

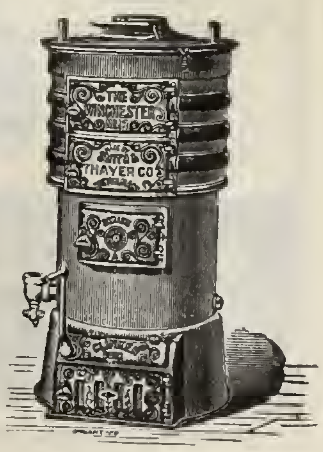
Large Radiators, easy to clean out.

Write for prices and secure the agency before the other fellow gets it.

WINCHESTER

Not how many but how few types is our guide. Some manufacturers have a mania for adding new types and kinds of heaters to their line. We have put all our brains into the "Winchester," and have striven to have it the best, and so far have been successful. Smith & Thayer Company, Boston, Mass., 106 Beekman St., New York.

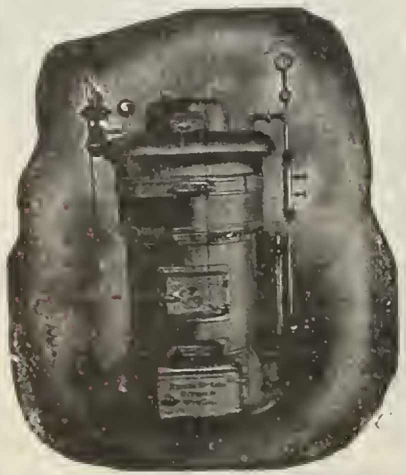
HEATER.



Pierce

BOILERS and RADIATORS

for Steam and Water Heating.



Pierce Touraine Steam Boiler.

LARGE HEATING CAPACITY.
ECONOMIC IN FUEL CONSUMPTION.

Endorsed by the foremost Architects and Heating Engineers.
Write for New Illustrated Catalogue.

Pierce, Butler & Pierce Mfg. Co.,
Syracuse, N. Y.
New York. Boston. Philadelphia.

The Champion Hot Water Combination Boilers.

They Fit Any Furnace.

Base section when used without ring sections.

Ring Section.

These Boilers are made in three sizes diameter, and from 100 to 600 square feet radiation capacity.

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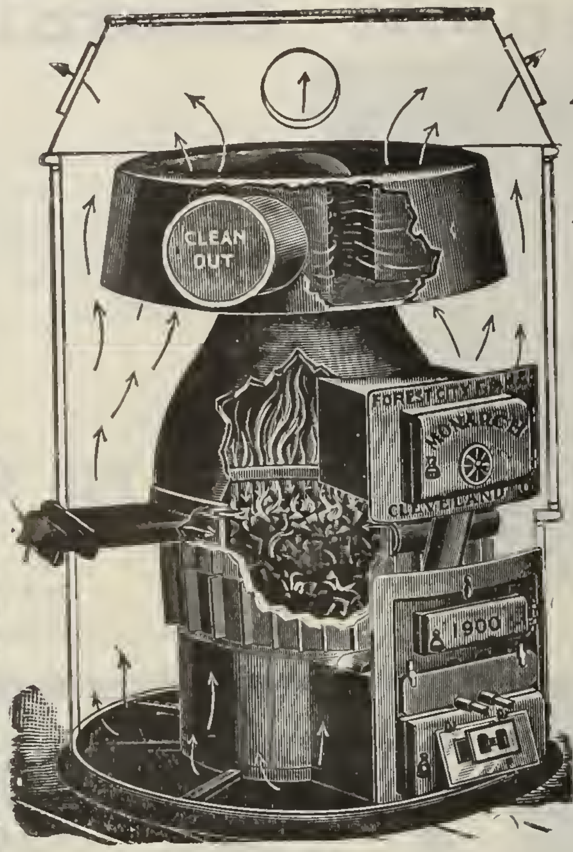

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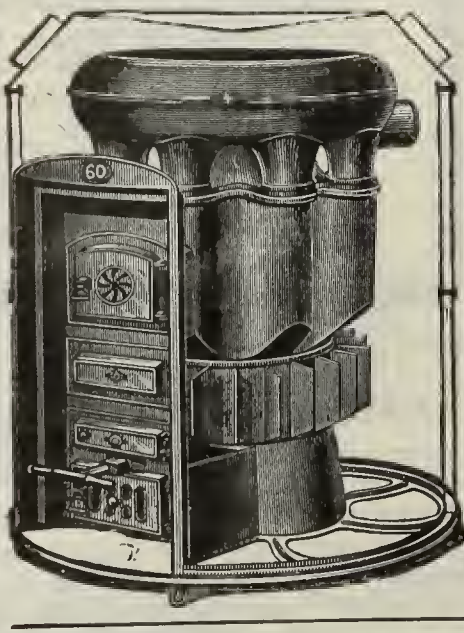

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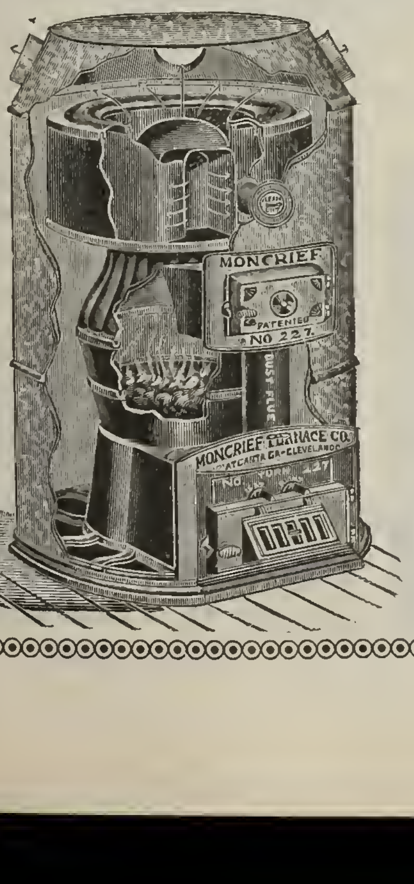
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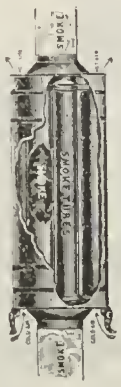

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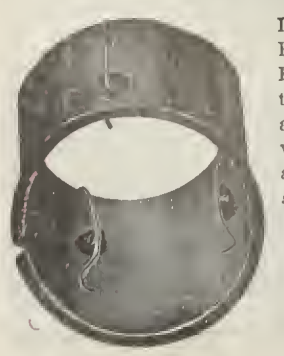

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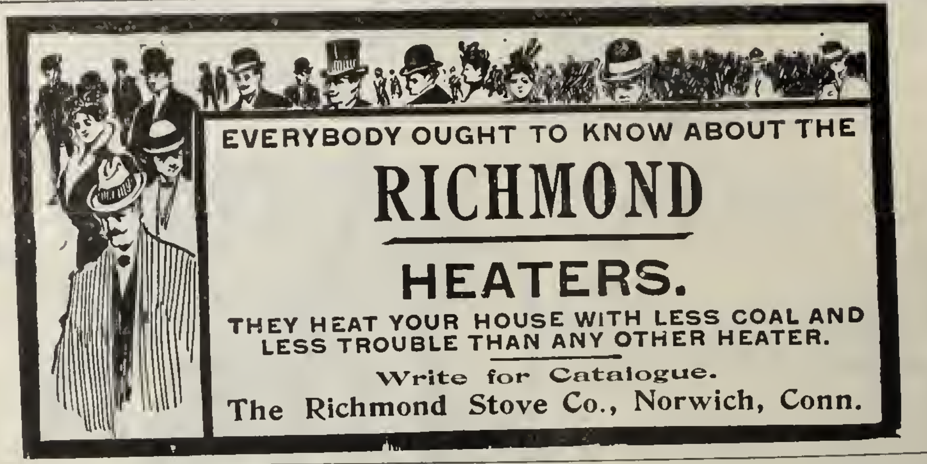

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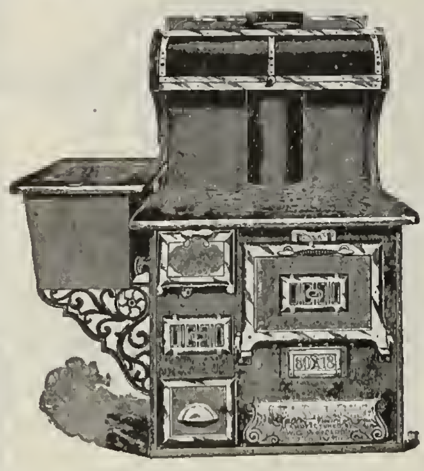

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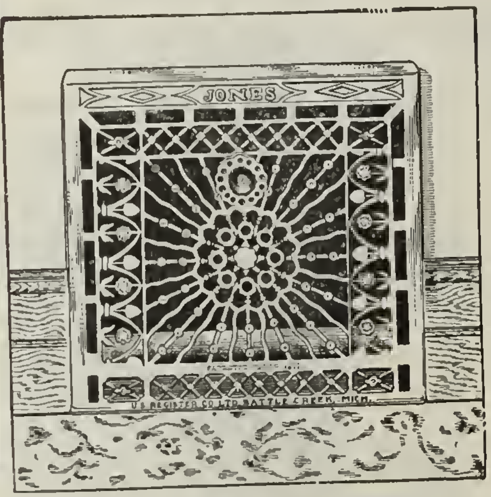

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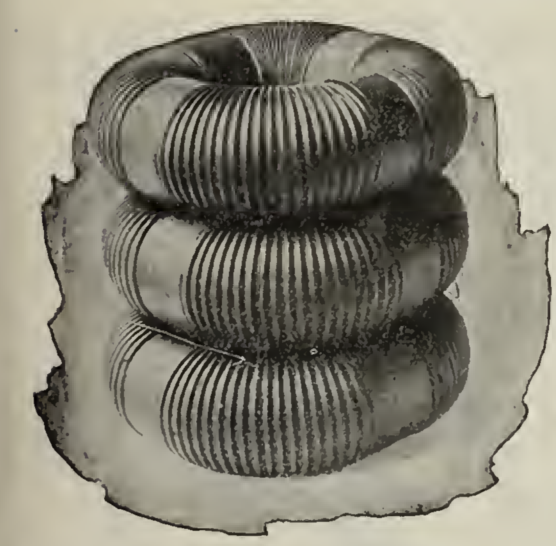

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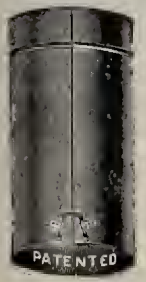

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Chapter I.—Furnaces—Is devoted to Furnace Construction—The Relative Proportion of Furnace Parts—Secondary Heating Surface—Economy and Efficiency—Heating Capacity and Exposed Wall Surface—Manufacturers' Ratings of Their Own Productions, etc.

Chapter II.—House Heating—Compares Furnaces and other apparatus, and describes Method of Setting Brick and Portable Furnaces—Location and Area of Cold Air Supply—Cold Air Rooms and Air Filters—Return Ducts and Air Circulation—Size of Hot Air Pipes—Location of Registers, etc.

Chapter III.—The Combination System—Discusses Heating Distant Rooms with Radiators—Balancing the System—Location of Water Heater in Furnace—Capacity of Water Heaters—Size of Radiators, etc.

Chapter IV.—Air—Deals with the Necessity of Ventilation—Water Needed to Moisten Air—Expansion of Air—Velocity of Air in Tubes, etc.

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Chapter VI.—Heating of Public Buildings, Churches and Stores—Is given to the Size of Furnaces Required—Grate Surface in Ventilated Buildings—Air Supply—Size of Heating and Ventilating Flues—Size of Stack Heater, etc.

Chapter VII.—Fan-Furnace Combination System—Is devoted to Positive Warm Currents from Fan Systems—Location of Fan and Driving Apparatus—How Good Furnaces are Aided by Fans—Types and Efficiency of Fans—Area of Ducts and Flues, etc.

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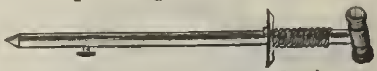

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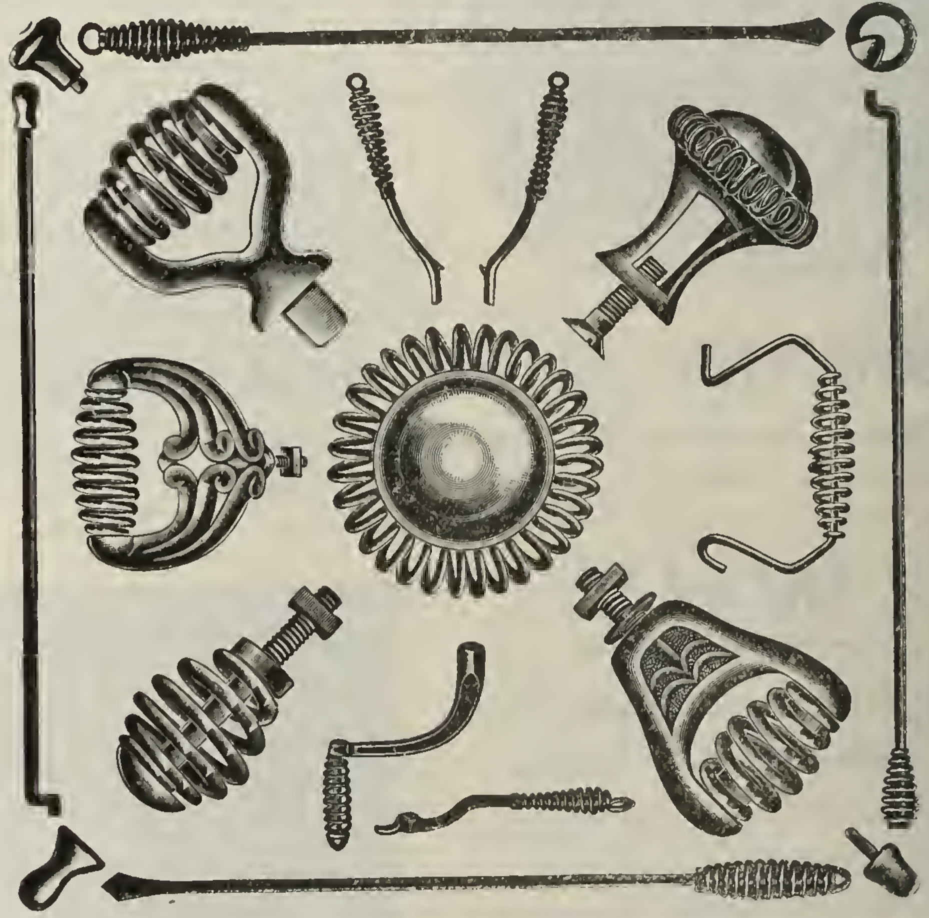

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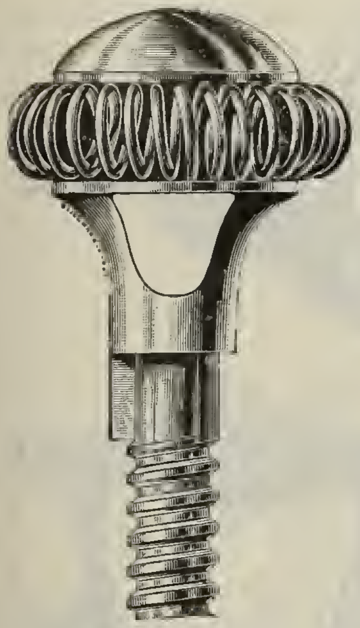

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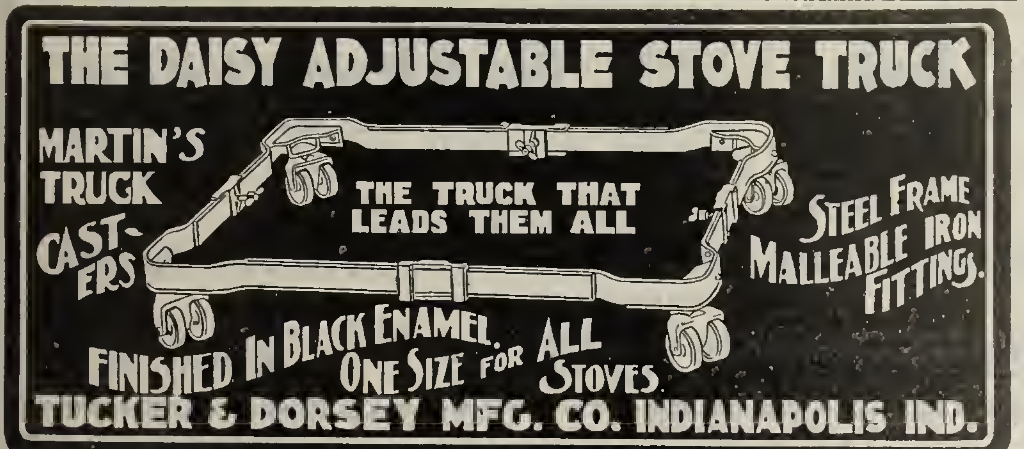

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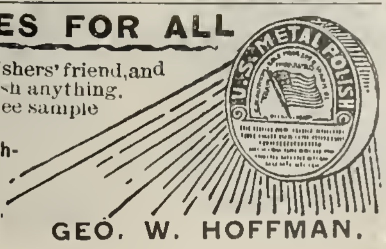

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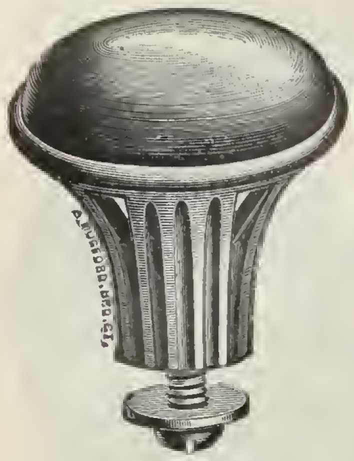
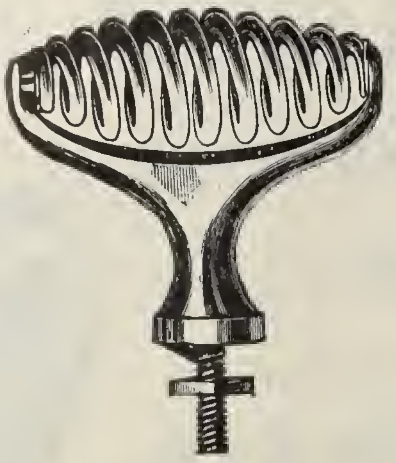
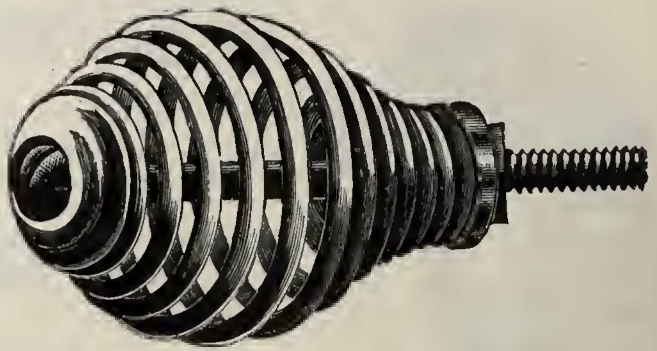
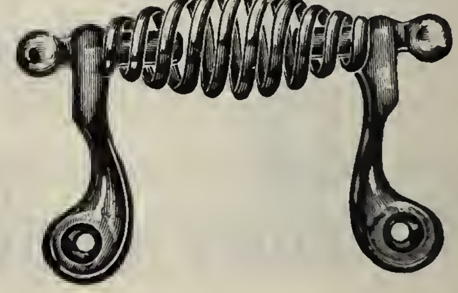

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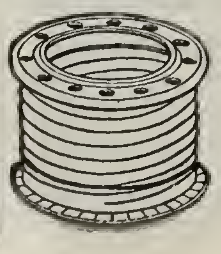

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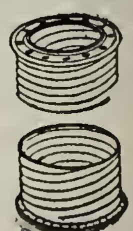

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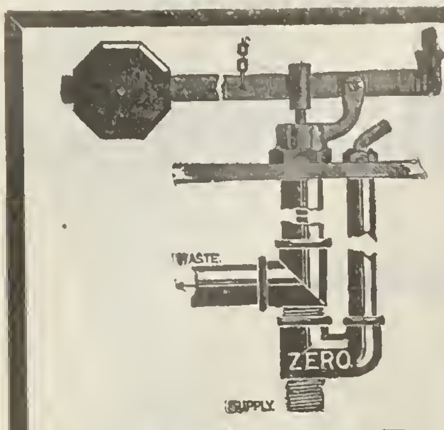

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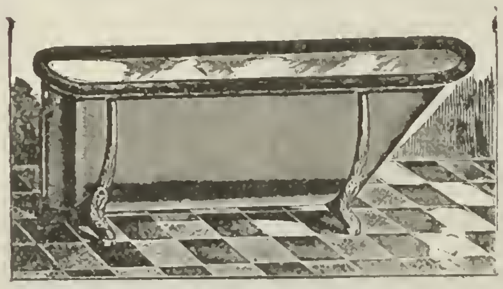

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Manufacturers of
Steel Enamel and Steel Clad

BATH TUBS and HEATERS.

NOTHING SUCCEEDS LIKE SUCCESS, hence the unqualified success others have experienced with the

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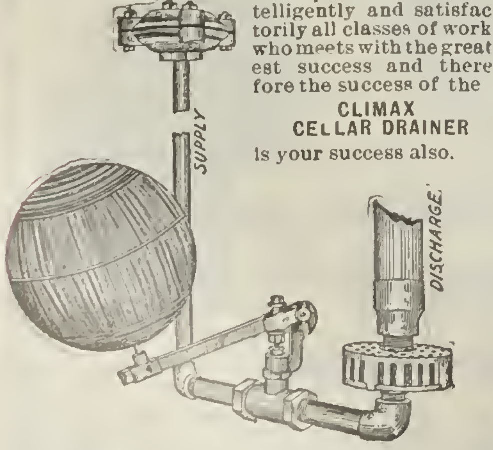

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Sold by all Jobbers. Manufactured by

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A GEM SOLDERING FURNACE

Will do more work, give more satisfaction, is ready for use quicker, gives a stronger heat than any other, besides being free from odor, noise or smoke. Write the manufacturers and get one.

Burgess Soldering Furnace Co.,
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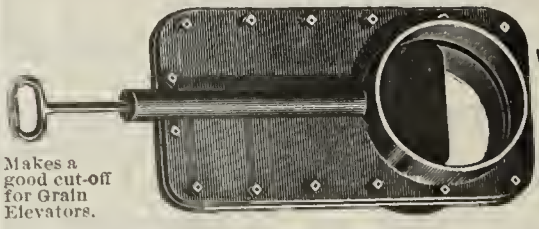

Makes a good cut-off for Grain Elevators.

IMPROVED WIND-GATE

SEND FOR PRICE-LIST AND DISCOUNT TO

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The No. 2 Torch

$2.50 Net.

Is thoroughly well made, the tank being drawn in one piece from heavy brass. All fittings are thoroughly reinforced, making it the strongest tank on the market. The burner is a strong generator; in fact, the No. 2 cannot be *equaled. Your money back if you are not pleased.* Jobbers sell at factory price, or we will ship by paid express upon receipt of $3.00.

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VACUUM APPLIANCES attached to all Heating Apparatus would

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to the value of the national debt each year. . . . . .

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GALVANIZED STEEL and WOOD TANKS.
All sizes and shapes.
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ALWAYS IN STOCK.

ALL SIZES OF

Galvanized range boilers, expansion tanks and boilers with copper tube coils inside for heating water by steam.

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BALL COCK.

Positive, Noiseless.
Saves Water.

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For Sinks and Trays.
Can be adjusted both vertically and laterally.
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Machine cut, at less price than can be cut by hand. Send Sample for prices.

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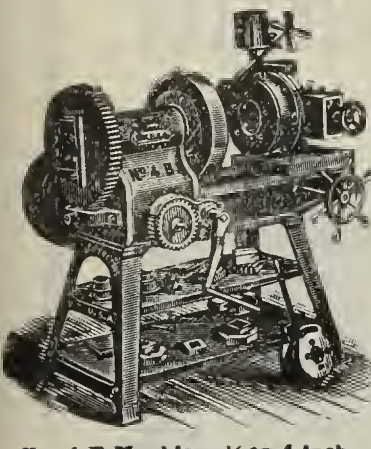

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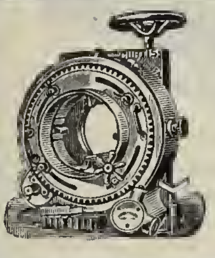

And one man can, with ease,
Cut off and thread a 12-inch pipe.
Smaller sizes proportionately easy.
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THE CURTIS & CURTIS CO.,
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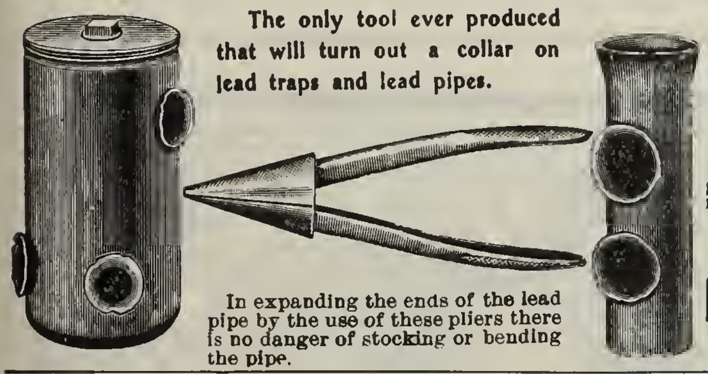
The Anderson Lead Pipe Expanding Pliers.
PATENTED.



The only tool ever produced that will turn out a collar on lead traps and lead pipes.

In expanding the ends of the lead pipe by the use of these pliers there is no danger of stocking or bending the pipe.

"PLUMBER'S BEST FRIEND."

PRICE $1.25.

Send for Discount.

Sample pair sent by mail to any point in the U. S., postage paid, on receipt of price.

Manufactured by
THE
Anderson Coupling Co.
PORTLAND, CONN.

The Improved Victor Instantaneous Water Heater

Is the cheapest, the most efficient and the neatest Water Heater made. It occupies but little space and is always ready, furnishing hot water in a few seconds day or night.

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For Testing Plumbing.

WRITE US FOR BOOKLET AND PRICE.

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Cleans out all obstructions in plumbing.

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Manufacturers of
LEAD PIPE, SHEET LEAD, SHOT,
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Everything You Want for Plumbing.

THE METAL WORKER
Stove Storage Receipts.

FOR the accommodation of Stove Dealers who desire to undertake the summer storage of stoves for their customers, we have printed books of Receipts arranged on a new and ingenious plan. The Receipt to be given to the customer is on one side of the page, and on the other side is a Memorandum of the conditions, needed repairs and storage charges agreed to. *Opposite the Receipt* is its Duplicate, and *opposite the Memorandum page* is its Duplicate. When the leaf which has the Receipt on one side and the Memorandum on the other is torn out for the customer, it leaves Duplicate of Receipt and Memorandum on pages facing each other.

This arrangement has the advantage of bringing the two Receipt pages and the two Memorandum pages opposite each other, before the customer's Receipt is removed, facilitating copying and comparison, so that the Receipt and Memorandum given to the customer may *exactly correspond* with that retained by the person who receives the stove for storage.

100 Receipts and 100 Duplicate Records, $1.00
Sent, post-paid, on receipt of price, by
DAVID WILLIAMS CO., Publishers,
232-238 WILLIAM ST. - NEW YORK.

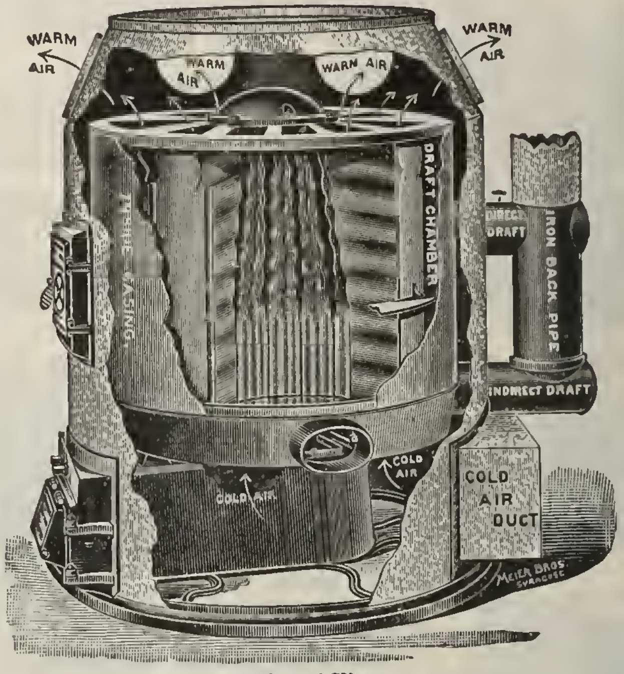
The Kelsey Warm Air Generator.

THE PRINCIPLE

Of the Kelsey is to warm great volumes of air by bringing it into **actual contact** with an **extensive** and **properly heated** surface.

This is accomplished by sending the air in **separate channels through** the long hollow corrugated cast iron sections which form the fire chamber.

This is a far more effective method, and the air is more thoroughly and evenly heated, than by simply **passing over** or **next to** a hot surface.



Sectional View.

Each section has eight square feet of heating surface, and weighs about seventy pounds. There are from nine to seventeen sections in each generator, according to its size. This means a powerful and economical heater, and an abundance of pure warm air. Each section is an independent heat generator, and by capping over one or more, and extending a heat-conducting pipe therefrom, the warm air is forced through long or level pipes to the rooms so connected.

Ask for booklets "**KELSEY HEATING**" and "**OPINIONS.**"

KELSEY HEATING COMPANY, SYRACUSE, NEW YORK.

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COOK & VAN EVERA CO.,
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"THERE'S ONLY ONE WARM AIR GENERATOR, THE KELSEY, AND IT IS PATENTED."

SPRING IS HERE

Soon the Water Cooler will be called into service.

Why not buy a new, clean one—to make, the sparkling water, doubly inviting and refreshing.

We can furnish all kinds and sizes on a moments notice.

Large stocks at all our branches.

Do not forget us on this and the thousand of other items illustrated in our catalogue. If you have no copy write any of our branch offices.

National Enameling & Stamping Co.,
NEW YORK. CHICAGO. ST. LOUIS.
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THE METAL WORKER.

NEW YORK AND CHICAGO.

New York, April 19, 1902.

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The Plumbers and the Supply Trade.

To those familiar with what is going on in the plumbing trade it would seem that there are two elements at work, one favoring more harmonious relations than now exist, and the other having more narrow aims. While there is no positive evidence that overtures have been made by the national bodies of either the plumbers or the supply associations, indications are visible of a strong undercurrent tending to bring the executive committees of the two bodies together for the purpose of adjusting some of the differences which now exist. On the other hand it would seem that some of the local and State associations of plumbers are pursuing the football tactics of searching for weak places in the lines. In some instances resolutions have been adopted or agreements have been presented to the jobbing trade for consideration and signature which have met with disapproval on the ground that the demands are unfair, conveying an arbitrary power to the plumbers without any compensating advantages to the supply trade. This has had the effect of encouraging a feeling that the plumbing trade enjoys an abnormal protection, and that the wholesale trade would derive some benefit from selling plumbing goods to all buyers, reserving a better price for the legitimate plumbing trade. Such a course would lead to an open market for plumbing goods, and there are not wanting dealers who are eager to include the standard line of plumbing goods in the extensive line of merchandise that they now carry for sale to the general public. It is improbable, however, that an open market for plumbing goods will be made for some time to come, for the conservative element in both branches of the trade fully appreciate the great disadvantages that would result. The wholesale houses recognize that it is much less laborious and expensive to handle and fill the orders of experienced buyers than it would be to educate others in the infinite variety of detail that must be learned before plumbing goods can be bought satisfactorily.

Consolidation in the Stove Trade.

The approach of the annual convention of the National Association of Stove Manufacturers, to be held in New York on May 14 and 15, has caused the revival of rumors of a projected consolidation of the leading stove manufacturers. A short time ago the local papers of Reading, Pa., mentioned the name of Ex-President Lazard Kahn of the National Association as being actively engaged in promoting consolidation in that center. The latest rumor, emanating from Nashville, Tenn., credits Mr. Kahn with being the father of a movement for the consolidation of between forty and fifty of the largest stove plants in the country. A dispatch to the *Chronicle* of Chicago states that the financing of the new company will require over $100,000,000 in cash, and asserts that everything indicates the combine will be an assured fact when the National Association of Stove Manufacturers meets in New York next month. That the subject of consolidation has been exploited and that options on many plants have been given to promoters is well known, and it is said that the options granted most recently have been on a more businesslike basis and more favorable to consolidation than those secured by the earlier promoters. It has also been reported that some men prominently engaged in the stove manufacturing trade in the West have assented to the proposition that a consolidation will be effected. Nothing more substantial than rumors has yet come to light, however, and it is probable that no authoritative announcement of a consolidation will be made until it is actually effected.

The Right to Strike.

An interesting decision regarding strikes was handed down the other day by the Court of Appeals at Albany, N. Y., whereby it was ruled that workingmen have the right to organize for the purpose of securing higher wages or shorter hours of labor, or for otherwise improving their condition, and that they have the right to strike, "provided the object is not to gratify malice or inflict injury upon others, but to secure better terms of employment for themselves." The case in which this ruling was made was that of the National Association of Steam Fitters and Helpers against the Enterprise Association, a rival organization of steam fitters. The one body of workmen insisted that contractors should not employ the members of the other association, who worked for lower wages, but should, instead, employ their own members, and caused strikes which resulted in ousting from employment all those of whose rate of wages they complained. The association whose members were displaced secured an injunction from the lower courts restraining the defendants from striking or making threats of strikes; but this action was reversed by the Appellate Division on the ground that members of labor organizations did not have to work with other employees not members of their organization and that they may legally initiate a strike to enforce their demands. The Court of Appeals, in sustaining the decision of the Appellate Court, took the still broader ground that the defendants had the right to strike for any reason they deemed a just one and also had the right to notify their employers of their purpose to strike. "A labor organization," the court said, "is endowed with precisely the same legal right as an individual to threaten to do that which it may lawfully do." This view will probably be concurred in by a majority of the public, although it is perhaps worth noting that the decision in this particular case was reached by a bare majority of one in a bench of seven judges.

A rather more startling decision was made last week by a judge of the Supreme Court in Brooklyn, N. Y., in the case of a printing company in that city, who applied to the court for an injunction restraining their striking employees from interfering with or assaulting nonunion men who had been employed to take the places of the strikers. The Judge refused the application for an injunction on the ground that it was unnecessary, and even berated the company for invoking the aid of the courts for the protection of their nonunion workmen. This decision was followed, a few days later, by a savage assault by the strikers upon one of the employees of the firm who were refused the injunction. This case has aroused a great deal of public interest and comment. It is felt that, while workmen are perfectly justified in striking for the purpose of securing advantages to which they deem they are entitled, employers, on the other hand, should be supported in their right to fill the places of the strikers; and, moreover, that the law should be ready to prevent any interference with men who are willing to work by those who have thrown up their employment.

Public Baths.

In an age in which hygiene and sanitary science command so much attention and when appliances for securing cleanliness have been brought to so high a point of perfection, it is astonishing that so few opportunities for personal cleanliness should be provided for the multitude in our great cities. While the private dwellings of the more comfortably off citizens are equipped, as never before, with hot and cold water, bathtubs and stationary wash bowls, open plumbing and all the most approved appointments for the promotion of personal cleanliness, and when even many shops and factories are furnished with elaborate apparatus for ablutions, whole sections of the more densely populated parts of our cities are too often unprovided with any sort of facility for the poorer portion of the community to practice—at least in the winter time—that virtue which proverbial authority teaches us is next to godliness. In New York City, for example, the only public bathing facilities offered to the inhabitants of the tenement districts are the floating baths which the rivers or tides flow through. These baths are often none too clean or inviting in themselves, while the water is not seldom fouled by mud and sewage, so that, for purifying purposes, their advantages are doubtful. And they are patronized, as a rule, only by the younger element of the population. Moreover, they can only be used for a few months of the year. During the rest of the year nothing of the kind is available. Under these circumstances it is not too much to assume that a large proportion of the denizens of the Empire City never bathe from summer to summer, and some never bathe at all. In this matter, as in that of other public conveniences, New York is far behind the leading European cities, as well as some of our own American cities, which provide places where the people, for a very small sum, can get all the bathing facilities they require at all times of the year. If a city is to be great and beautiful it must be clean, and no city can be clean if a large proportion of its inhabitants are dirty. Public baths on an adequate scale should be provided in all our chief centers of population. The absence of these institutions places an American city in unfavorable comparison with those of ancient Greece and Rome, and even the Oriental cities of to-day, in which public baths were regarded as an essential feature of city life. It is somewhat strange that while millions of dollars are being given by our rich men for the founding and support of educational and charitable institutions, the cause of decency, which could be so greatly promoted by the building and endowment of public baths, does not seem to appeal to these philanthropists.

Our Enormous Steel Production.

Every one connected with the steel industry expected that the statistics of the production of open hearth steel for 1901 would reveal a very large increase. But we question whether many realized how rapid had been the development last year. The American Iron and Steel Association have just published the figures from which we present below a table giving the production of Bessemer and open hearth steel ingots for a series of years:

Production of Steel in the United States.—Gross Tons.

Year.	Open hearth ingots.	Bessemer steel ingots.	Total.
1895	1,137,182	4,909,128	6,046,310
1896	1,298,700	3,919,906	5,218,606
1897	1,608,671	5,475,315	7,083,986
1898	2,230,292	6,609,017	8,839,309
1899	2,947,316	7,586,354	10,533,664
1900	3,398,135	6,684,770	10,082,805
1901	4,656,309	8,713,302	13,369,611

There has, therefore, been an uninterrupted increase in production of open hearth steel, which has quadrupled since 1895 and which promises to show a further striking development during the current year. It is well known with what feverish activity new open hearth steel plants, large and small, are being built all over the country, and what interesting developments are going on in this branch of steel making, metallurgically and mechanically. So far as Bessemer steel manufacture is concerned, no new large plants are under construction, since the great Buffalo plant may be regarded as a substitution for the dismantled Scranton works. Of course Bessemer steel capacity has increased in recent years in spite of this, but this has taken the form of strengthening and remodeling the older works. There are many who confidently assert that open hearth steel is now being made more cheaply than Bessemer metal, but the question of cost is so much dependent upon local and upon passing phases that it is impossible to generalize.

The most striking fact, however, in the figures now available is the tremendous output of steel in 1901, which in all probability will be largely added to during the current year. That this country should since 1895 have more than doubled its output of steel, and should be actually importing foreign metal although making steel at even a greater rate than the 1901 figures reveal, is eloquent proof of its enormous consuming capacity.

Steam Engineering and Sheet Metal Scholarship.

Joseph T. Ryerson & Son of Chicago, Ill., announce that, in grateful appreciation of the prosperity which has attended the house since their establishment 60 years ago, and in memory of the founder of the house, they stand ready to contribute $1500 a year toward scholarships or other sources of knowledge, dealing with steam engineering and the fabrication and erection of sheet metals in all forms. The benefit of this donation they desire should be available alike to the ambitious rivet boy and the journeyman who would rise from the ranks equally with the son who would succeed his well to do father. The details necessary for the wise use of this generous offer have not yet been perfected, but the company are sure that they will soon be able to adopt some plan to make the Ryerson scholarship a means of inspiration and benefit to many young men in years to come.

In the early pioneer days of boiler manufacture in the West, Joseph T. Ryerson of Chicago was one of the leading figures of the industry, and was often found a wise counselor and friend to many young men starting out in business. Thus the proposed establishment of a scholarship of the nature indicated is a fitting tribute to his memory on the part of his successors.

THE NEW YORK STOVE TRADE.

Already the advance in iron and molders' wages has had the effect not only of stiffening up prices somewhat, but also of creating a tendency on the part of the members of the stove trade to act in concert in regard to prices on some lines of goods. The agreement as to the price of builders' ranges which was reached during the administration of the late association has been reaffirmed, and some even claim that this schedule of prices is too low, and that they are getting higher figures for their goods. As yet no such action has been taken in reference to the general line of portable cooking stoves and ranges and the goods that are more generally handled by the out of town trade. In view of the advance in the price of pig iron and in wages, however, many manufacturers find the necessity of making independent advances on some of their goods. This course, while independent, is found on investigation to be quite general. With the near approach of the convention of the National Association the course pursued by the manufacturers in other districts in advancing their goods 5 per cent. is not without its effect in the local market, and it is not difficult to discover a strong tendency toward higher prices. The scarcity and higher prices of iron and the increase in molders' wages have also had some influence in the withdrawal from the local market of some of the outside competitors who have heretofore formed a very effective disturbing element. As yet the prices prevailing on the general line of stoves and ranges have not reached the level that has been established in other sections, where the manufacturers have been able to eliminate the disturbing factors and pursue a more harmonious course of action.

THE PHILADELPHIA STOVE TRADE.

Satisfaction is generally expressed by both manufacturers and dealers as to the existing condition of the stove trade in Philadelphia and vicinity. Large sales of spring and summer goods have been made, but deliveries have been somewhat delayed by the manufacturers. A few warm days is all that is required to start the early retail trade and to bring out orders for deferred shipments. Dealers are said to have bought more heavily in their initial orders this year, owing no doubt to their experience last season of delayed shipments, and, in many cases, the total impossibility to get goods on renewal orders. With the present prosperous condition of the country, it is expected that the sales of gas and oil goods this season will exceed those of any season heretofore.

Manufacturers of cast goods are looking forward to a profitable business, and the indications favor that result. Some hesitancy and no little uncertainty, however, have been noticeable owing to the more or less constant rumors of consolidations among the manufacturers. Combinations have been made—on paper—time and time again, but, so far, they have lacked the element of a satisfactory conclusion. This has its effect on the trade, and dealers are beginning to wonder what will happen next and who will be the parties to combine. At this time rumors are current of the amalgamation of several manufacturers which may not be without some degree of truth, but authentic statements are not obtainable. The various foundries are reported to be quite busy, and some new goods will be offered the trade before the season is fairly on.

A large quantity of heaters and ranges will be required this season for the building operations in the city of Philadelphia, which, one of the prominent dealers advises us, will be the most extensive for several years, there being a most active demand for new houses in many parts of the city. Prices in most lines have advanced, but there seems to be no great objection to the same on the part of the buyer, the fact being evident that prices of raw materials are higher, while the recent increase in wages to the molders has increased the cost of the finished article. Consequently the advances made by the manufacturers are taken as perfectly legitimate.

The Late William J. Carton.

As briefly announced in our last issue, William J. Carton, formerly president of the Carton Furnace Company of Utica, N. Y., died at Colorado Springs, Col., on April 3, as the result of a fall from his carriage. While driving a spirited team the horses bolted and Mr. Carton was thrown heavily against a barn, his skull being fractured and his neck broken. For some years past Mr. Carton, upon the advice of his physician, had passed his winters at Colorado Springs for the benefit of his health, returning in the spring to Utica, where he spent the rest of the year. He was born in Utica 45 years ago and was educated in that city. Later he entered Seton Hall College, at South Orange, N. J., and after graduation entered the furnace business, which his father had long conducted in Utica. On his father's death, in 1881, he purchased the furnace patterns from the estate, formed a copartnership with John B. Jones, and carried on the business under the name of W. J. Carton & Co. In 1883 his brother Edward entered the company, who were then incorporated under the name of the Carton Furnace Company, with W. J. Carton as president. The company, in 1898, were merged with other concerns in the International Heater Company. Seven years ago Mr. Carton was stricken with a serious illness, which compelled him to relinquish a large share of his business activity. He resigned the presidency of the Carton Furnace Company, being succeeded by his brother, Edward A. Carton, but retained the offices of vice-president and treasurer, and continued his financial interest in the concern. The remains of the deceased were brought to Utica, and the funeral services were held from St. John's Church on Tuesday, April 8. Mr. Carton inherited much of the executive and business ability of his father, and, had his health permitted, would undoubtedly have become quite as active a factor in business as was his father. He was never married and leaves three brothers—John F. and Matthew of St. Louis and Edward A. Carton of Utica.

The Century Stove & Mfg. Company.

A new industry at Johnstown, Pa., is the Century Stove & Mfg. Company, recently incorporated, with a capital of $100,000. The directors of the new company are: Rowland S. Wilson and Robert Monroe, both of the Reinecke-Wilson Company of Pittsburgh; Edrick C. Warren of Cleveland, Ohio, and John H. Waters and Samuel B. Waters of Johnstown. Mr. Wilson will be the president of the concern and Mr. Roberts secretary and treasurer. The new company will manufacture all kinds of gas cooking and heating stoves, gas hotel ranges, gas burners, and a variety of stamped sheet metal specialties. They will also do all kinds of electroplating and japanning, and will be in a position to carry out contract work in sheet metal and stamping for inventors or manufacturers who require work of the kind. The company are adapting a former wall paper plant in Johnstown to their purposes. It is said that the Century Company have over half of their stock subscribed, a large number of citizens of Johnstown having become interested in the enterprise. About 75 hands will be employed at first, which number is expected to be largely increased in the near future. The necessary machinery and equipment are now being placed, and active operations will begin as soon as the plant can be completed. The main building is of brick, 60 feet wide and 300 feet long, with the boiler and engine house adjoining. A railroad siding connects with the plant, which provides good facilities for the handling of the raw material and the finished product. The ground on which the factory stands is large enough for extensions when such are rendered necessary. E. C. Warren, who will be the manager of the plant, has been for a number of years manager of the Dangler Stove & Mfg. Company's works at Cleveland, Ohio. John H. and Samuel B. Waters, who are directors of the company, are also connected with the National Radiator Company.

THE IDEAL STOVE FOUNDRY, Daleville, Ind., was recently damaged by fire to the extent of about $10,000, most of the company's patterns being destroyed.

A PLEA FOR PUBLICITY.

Doubtless opinions will differ as to the propriety of the suggestions given below, although they are made by a successful stove manufacturer who has all his life been prominently connected with the stove trade, and who does not lack experience to ripen his judgment. The contribution is presented in the interest of those who may favor the general proposition. It would seem, however, that in many instances an open meeting would stop the discussion of matters of most vital interest to stove manufacturers alone, and which, are necessarily of a private nature. The greatest benefit derived from meetings of business men is perfect freedom in the interchange of views, and while it may be true that many of their sessions could be open without disadvantage, there can be no doubt that the members of any association and its officers are the best judges of whether or not it is best to conduct their proceedings in the presence of the members only. The communication is as follows:

In these twentieth century days anything that savors of Chinese methods of mystery and concealment should be banished. Civilization of late has been treated to the inside workings of that great empire, which are most unfavorable to its policy. The National Association of Stove Manufacturers, a number of years ago, inaugurated similar methods of concealment regarding their proceedings, and have continued them down to date. How much benefit has been derived is known to them only, but it has probably been of the same character as that secured by China over the other nations. Objections were originally made by some manufacturers to having small makers come in with them, because they would be likely to profit by their long experience, &c., which they claimed had cost them money. "Let them pay for theirs," was about the expression. This objection has passed away from the fact that it is proved better to educate the inexperienced on good business methods than to let them pursue a wrong course.

It is not meant by this that all the elders know the right way; but there is positively a fund of solid facts accumulated in a business career, and there is a code of unwritten laws that execute themselves as inexorably as the natural laws do. It can be pointed out that exceptions are largely quoted against such experience; neverthless, the solid facts accumulated in business never have and never will lose their value to those who will consider them. Some of the experienced have the faculty of imparting this knowledge to their juniors in a mode that sinks deep and will bear fruit. Others think that only they know it, and in a mysterious manner cloak and wrap themselves up in their concealed wisdom. But the fact still remains that only time can enable me to accumulate those experiences. A young lawyer may bring out a chain of statements that will convince a jury, until the older, experienced lawyer draws from his long accumulated store of facts a few real cases and sweeps out his less experienced brother who had never heard of such cases.

As a fact every man who deals in stoves is interested in all that appertains to the business, and should be kept fully posted regarding its general affairs. It must be stated that it would not be expected that dealers should have the entire facts regarding costs, &c., in producing stoves any more than they would want their customers to know their costs, &c. The stove industry to-day is greater than ever in its history, and demands a high order of talent to run it—and it is getting it. Because a man as a molder or a tinner is not enough to qualify him for the race. The outside of the shop contains the things unseen to-day. As the matter now stands, nothing much reaches the attention of the dealers except what comes, perhaps, from the traveling men, and his information may be somewhat uncertain, as it is likely that most of it is second hand.

A manufacturer returning from the meetings will converse in his own office about what he has heard, and, naturally, it will be of whatever kind the impressions may have made upon him, favorable or not. Those around the office hear many of these remarks, and perhaps the traveling man, when he drops in, gets the ideas, and, in his turn, he may convey them to his customers. With a full and free publication of all proceedings, except those stated, no possible harm could happen, and perhaps much good might arise. It would certainly remove from the minds of the dealers the impression that he was the only target the association was firing at.

Whether China will continue in her policy is not fully known. Neither is that of the National Association. But the verdict of civilization is against the former, and if any one believes that the trade can be hoodwinked by secretive methods they are greatly mistaken. The trade should have full and accurate information on all subjects connected with it, and one source of such information should be the meetings of the National Association of Stove Manufacturers. Although it does not follow that much might be learned from them, as it is now, whatever there may be is not permitted to reach the trade. Censored news may be necessary in war, but not in peace. Let us have publicity.

Ideal Gas Stoves and Ranges.

We have received from the Ideal Mfg. Company, Detroit, Mich., a copy of a remarkably attractive catalogue and price-list which they have issued for the season of 1902, covering the Ideal gas stoves and ranges, which are manufactured in many styles and varieties. The work consists of 64 pages of letterpress, profusely illustrated and printed in two colors. The illustrations are for the most part well executed half-tones, showing the ornamentation with remarkable fidelity, the effects being produced by contrasts of nickel plated parts with the black surfaces. The front cover is embellished with a bird's -eye view of the company's works and two automobiles, the leading one of which bears the name Ideal. Beneath the picture is the inscription, "Always in the Lead." The early pages are devoted to an illustrated description of the Ideal Common Sense range, which embodies the modern features and is offered in several styles and sizes. Following this are several pages devoted to high-class special grills and outfits for club, *café* and grill rooms, or residences. The illustrations show the outfits installed in position for actual use, and prices are given of the cost of each equipment. The Ideal end broiler is next in order, after which comes the Ideal cast front drop door series in its various modifications and embodying the modern improvements. This is followed by the Ideal swing door cast front series and then by the Ideal steel front series. The latter is intended to care for the wants of a moderate home. The doors are made durable by being mounted on neat cast frames that close snugly against jambs of No. 14 steel. The concluding pages of the catalogue are given up to illustrations of the Ideal Independent gas broiler, the Ideal hot plate with combined oven and hot closet and the Ideal Independent water heater. A table of contents is convenient for reference.

A. L. Canfield's Showroom

The stove dealer who visits the stove salesrooms of A. L. Canfield, 284 Pearl street, New York, will be pleasantly impressed with the attractive character of their new arrangement. The floor of the main office has been covered with a handsome carpet, the side walls and ceiling have been newly papered, and Mr. Canfield has built a very convenient private office for his personal use. The goods displayed at this season are not less attractive. A line of the Detroit Jewel gas stoves and ranges are shown that are well adapted to meet all the requirements of the trade. The Monarch line of blue flame oil and gasoline stoves of the cabinet style in both the high and junior grades with broilers and ovens leave little to be desired by those who make a push on these goods. The Beaver ranges for coal have already become well known from their handsome design, finish and trimmings, as well as their excellence in operation. These are but a few of the many money making leaders that the visitor will find of interest.

THE SCRANTON STOVE WORKS, Scranton, Pa., who have been very busy, have granted their entire force of employees a 5 per cent. increase of wages.

THOUGHTS FOR THE CONSIDERATION OF FURNACEMEN.

BY IOWA.

It is a pleasure to me that considerable thought has been aroused among furnacemen by my article presented in *The Metal Worker* of March 8. I have received a number of letters on the subject from different parts of the country and one from Canada. Furnacemen ought to be stirred up to think for themselves. I am of the opinion that they should think along different lines and get themselves out of the old ruts. There is need for a complete reformation in furnace building. Furnacemen do not have the opportunity to profit by what they learn in their experience. The reason for this is that the manufacturers of furnaces do not have to carry the responsibility of making the furnaces work satisfactorily; consequently, they are not conversant with either effect or cause. Manufacturers sell furnaces all over the country, and if something goes wrong and the furnace is unsatisfactory the poor fellow that puts it in has to suffer and not the manufacturer.

There are many things that need to be substantially changed for the better in furnace making. Furnaces can be made of cast iron that are perfectly gas tight, and remain so for several years. But unfortunately they are not made that way. Most of the constructions that have appeared in the past 40 years are of the same type. The closed jacket methods of handling air are bad and ought to be changed. Every furnace ought to be set in brick and have the heating surfaces differently arranged. If furnacemen will study closely they will find advantages to be derived from the horizontal movement of air over horizontal heating surfaces in a furnace that are not to be obtained from the vertical movement. We will not reach such a revolution in construction until furnacemen have studied the philosophy of heating a little more and see the nature of the mistakes that have been made quite generally all over the country in furnace heating.

In reference to the article referred to and the inquiries and criticisms I have received I will state that I have no axe to grind and only desire to give my experience and the result of my investigations to people who are anxious to know. To those writing for further explanation as to the "rotary method" of handling the air I would say: Read the article again carefully, as it suggests the method of proceeding.

VENTILATION FAVORED.

In reference to the article of "R. R. M. C." I would say that he writes criticising what is *not* our method in school house and church heating. We *heat* the school house or church by the rotary method previous to the assembly of the scholars, but, when they are gathered some system of ventilation must be used. We pass the outdoor air through our heating oven into the building, thus securing abundant ventilation and providing moderately warmed air from out of doors. We adapt our heating to the ventilating method we use in the school house. The fundamental idea here is that heating and ventilating are two different things, and one must not be sacrificed to the other. Let every man put a peg down here and hold to this as one of the fundamental truths. It will work a revolution in many plans for heating. A school house can be best heated by this rotary method, but it must be applied with common sense.

CARBONIC ACID GAS DIFFUSION.

Again "R. R. M. C." says: "'Iowa' speaks of ventilating registers near the floor as wrongly placed." Again he misunderstands. Circumstances may make that the best place in some buildings. What we claimed was that such ventilators placed there to carry off the carbonic acid gas were wrongly placed. Now we are after the truth. Put a peg down here and fasten another truth. Carbonic acid gas does not settle to the floor, notwithstanding 100,000 writers on science and ventilation have said so. And when our friend says: "It, being heavier, will most assuredly fall to the floor," he, like thousands of others, is following one of the innumerable delusions that are humbugging the world. Mark these facts: Carbonic acid gas though specifically heavier than the air at the same temperature is lighter than air at a higher temperature. It comes from the lungs at a temperature of 98 degrees and moves into the upper atmosphere of the room along with the heated breath. There the law of diffusion of gases takes hold of it. It mingles with the warm upper air. That air, contaminated with bad breath and carbonic acid gas, is hiding in the upper part of the room, while the scientists, philosophers and health seekers are busy trying to trap the bad air at the floor, where the good air of the room is almost sure to be found.

MOVEMENT OF AIR IN ROOMS.

Some day ceiling ventilation with valved outlets under control will be in universal use in school houses and churches. We have caused many of them to be used and always with success. Here, then, is a chance to peg down another truth. Hundreds of plates have been printed showing the movements of air in rooms—most of them portraying the brain chambers of the writer rather than what is really taking place in the rooms. Let us get at some fundamental truths here. Where rooms are heated from furnaces, indirect steam heating, &c., the strata of air in the rooms lie horizontally like oil and water—the warm air above, the cold air below. Wherever and however the warm air may go into the room it goes immediately to the ceiling. This is the rule everywhere, subject to some modification at times. It makes very little difference as to whether the warm air comes through the floor or through a register 8 feet from the floor. Exhausting from the floor takes the cold air away, brings the warm air down from the ceiling, just as water would be taken from under oil, where a room was half filled with each. All of the water would be drawn off through a floor opening before any of the oil would be drawn off.

THE ROTARY SYSTEM.

Just so with warm and cold air, and on this principle the rotary method of the Campbell Furnace Company is based. The cold air is drawn down—the warm air comes down with it—no cold air is allowed to accumulate on the floor; there is a continual downward movement; the only method of air circulation that secures thorough circulation and distribution of the heat. There are no currents of air. It is a still movement. We have never yet found a building in which the rotary air movement could not be used to great advantage.

SOME THOUGHTS ON CONSTRUCTION.

Another point at which we have made a radical change is the movement of the air over the furnace. Commercial gain—not the good of the heater—originated the galvanized iron jacket with its vertical air movement. The faults here are numerous. Some of them are as follows:

1. The air is often held too long on the furnace and becomes overheated, dangerous, burns the dust and has the burnt air flavor.

2. Very often all the air is heated by the hot fire bowl, the upper parts adding no heat to the air. If the air was coming horizontally upon the furnace each part of the furnace would get its own cold air as a stove does, and the air could never be heated to over about 225 degrees. It would fly away from the furnace before it could be overheated and more cold air would rush in. Thus a given amount of fuel would do a great deal more work and the furnace would not be burned out so rapidly. It is a bad plan to multiply heating surface vertically.

3. By the close jacket air movement a great part of the heat radiated through the furnace is lost. Heat is an effect, not like common potatoes. The effect must be caught by all the cold air that can possibly be thrown upon the furnace. Water will carry off all the heat that radiates through the boiler sheet; air will not; hence the furnace becomes red hot. The lesson from this is: A furnace must not be crippled in its air movement. Give it all the air it will take. Let it come to the furnace in abundant measure.

E. H. Rider of the Stanton Heater Company, Martin's Ferry, Ohio, is visiting G. R. Mokel, their agent, at St. Joseph, Mo., to assist him in closing some large contracts for the Stanton Hot Air Furnaces.

FUEL GAS AND GAS APPLIANCES.

At the annual meeting of the Ohio Gas Light Association, recently held at Columbus, Ohio, President Henry L. Doherty, in his address, discussed subjects of interest to the gas stove trade. The following extracts from his address are presented for the information of our readers:

I consider fuel gas, in its universal sense, to be out of the question, or at least until some method for the cheap production of oxygen shall have been found. While a field of enormous dimensions already exists, the acquisition of this business rests almost entirely with the wisdom and ingenuity of the designers of our fuel gas appliances. The sale of gas which contains 650 B. T. U. at $1 per 1000 cubic feet for heating purposes is equivalent to selling heat energy at about $1.54 per 1,000,000 B. T. U., this in turn being equivalent to about $53 per ton for good bituminous coal. To make a reduction in the selling price of gas which would even in a measure compensate for this vast difference in cost to the consumer of heat energy is simply out of the question, and our only hope lies in perfecting our fuel gas appliances.

Our gas appliance business is in a crude condition, in spite of the fact that so-called satisfactory results are often obtained with most of the appliances which we use. Satisfaction, after all, is a relative matter, and we should aim to have the best rather than to have something which is merely a little better than was used a few years ago. I have never seen any tests of fuel gas appliances which were at all comprehensive or conclusive. Enormous opportunities for inaccuracies always exist, and the work has generally been done by men who have not taken the trouble to study the laws of heat and combustion. While it is generally an accepted fact that every fuel gas appliance has some favorite rate of gas consumption at which most economical results will be obtained, yet none of us have ever made this a subject for special research work, or at least not to my knowledge. I might cite as an example our present water heaters. I not only criticise their manufacture, but I also criticise their method of installation. I know of nothing which would so increase our business as our ability to obtain and install a water heater which would have a working efficiency beyond that now obtained, but which is not impossible with the present existing prices of gas and the knowledge of the engineering problems involved. At present we must contend with several causes of inefficiencies in independent water heaters, as follows:

Different rates of gas consumption, irregular drafts, radiation from boiler and piping, and radiation from water heater when not in use.

Radiation from boiler and piping can be partially prevented by an insulated covering on the boiler. Irregular drafts can be practically overcome by the use of a broken length of flue pipe with a canopy above it. The draft in your chimney must constantly change, due to the intermittent use of the water heater, or due to other appliances using the same or adjacent flues. If the draft is excessive more air is drawn through the heater than is needed to support combustion, and the heat absorbed by this excess air is net loss. As the flow of gas varies only as the square root of the pressure, and not directly in proportion to changes of pressure, the efficiency of the heater is not much affected by a slight change in pressure, and we could obtain fairly economical results if the heater were so arranged that whenever it was turned on we would get approximately the most favorable rate of gas consumption. This could probably be done only by the use of some sort of stop cock which could only be in the position of "full on" or "entirely off." Radiation from the heater itself is a serious matter, since being connected with the flue it continues to induce a draft even after the gas has been turned off, so long as the water is at a temperature higher than that of the air. This causes cold air to come in contact with the coils of the heater, and as soon as the water contained in these coils is cooled it drops to the bottom of the heater, and the hot water comes over to take its place and in turn is cooled and drops to the bottom. If you will stop to think for a moment you will see that the circulation in your heater reverses when you turn off the gas. I think this loss could be most easily prevented by so arranging a gas stop cock that both the gas and the water will be turned off and on at the same time. With such a stop cock on the water pipe no circulation would take place, and only the heat contained in the water in the coils of the heater would be lost. I cite this merely as an example. The same general criticisms are applicable to almost every other appliance which we use. A good water heater would not only give us the gas consumption of that water heater, but would put hundreds of gas ranges in constant use. Cheap gas stoves for the heating of rooms have materially curtailed our opportunities in this line. A gas heating stove, to be extensively used in an ordinary climate, must have a flue pipe which will discharge out of the room the vapor of water and the CO_2, and as little as possible of the heat generated by combustion. I am not afraid that our combustion is not complete, and I see no particularly harmful effect from a much larger percentage of CO_2 in the air than we are likely to get, but I am afraid of water vapor. CO_2 is as inert as nitrogen, and if any CO is produced it is in too insignificant a quantity to be considered. I doubt if the burning of 50 feet of gas per hour in a room, in even a very crude heating stove, would produce as much CO as would result from the smoking of one cigar.

I think we must change our methods to make ordinary gas heaters satisfactory. I think that eventually we will aim to develop the maximum quantity of the heat of the gas in the form of radiant energy, which travels without regard to the laws of gravity, which can be directed and controlled, and which warms the body and the furniture without expending itself entirely on the atmosphere of the room. To get a large percentage of radiant heat we must burn our gas at a high flame temperature, and direct the heat of the flame on some medium which will enable it to give off all excess heat in the gas above a certain temperature in the form of direct heat rays. This result could probably best be arrived at by the use of recuperative flues, which will deliver the heat in the outgoing gas to the incoming air and gas.

Desirability of Developing a Market.—I do not want to omit to answer in some way the charge which is frequently made that the engineering branch of our business is falling into neglect, owing to our entire efforts being devoted to the problem of selling gas. I do not think this charge is well founded, and I think none of us are more anxious to sell gas than is warranted in the light of recent experiences. It is not a difficult matter to double the earnings of a company by developing the market, and it most certainly is impossible to double the earnings of any ordinary company by improving its operating conditions, no matter how much time and money are so expended.

Personally, I do not believe in free service pipes, I do not believe in giving away gas stoves, and I do not believe in selling gas stoves at cost. I think the problem which confronts us is one of how much money we can afford to spend to increase our consumption, and how can this money be expended to give the greatest increase in consumption. I believe that the greatest increase in consumption can be obtained by expending this money to make people want stoves, and I also believe that you can make these people help carry along your campaign, when once you have made them want a stove, by paying you more than it cost you. There is a general and prevalent idea in the gas business that the main reason why people do not use gas for cooking is the obstacle of first cost, Now if this reasoning is proper and sound everybody in towns where gas stoves are free would immediately put in a gas stove, and yet in some towns where stoves have been given away there are not as many in use as where they have been sold. This fact is unquestionably an absolute proof that the main obstacle in putting gas stoves in use is not their first cost. The question of how to make people want stoves is one largely of opinion. I think, as a general proposition, and with the proper funds at your disposal, it is safe to work every avenue that you do not think ineffective. In other words, take advantage of every opportunity that offers, even though it might be unpromising. Time will be apt to demonstrate the worth of every opportunity at a small cost.

Personal solicitation always seems to be most effective, but advertising is really another form of solicitation, and your solicitor may not be able to get an audience with people that your advertising will reach. I never heard of any one buying a stove on advertising alone, and yet I am confident it is impossible to get superlative results without advertising, and it is a simple form of solicitation that is methodical, cheap, systematic and persistent. Your advertisement is a written solicitation, and presumably written by an expert. It can approach people whom you cannot reach in person, can enforce attention without irritation, appeals to your prospective consumer in all sorts of humors and in all stages of "business," and if persistently followed up will some day strike that prospective consumer when he is in a receptive mood, and he will at least give your solicitor an interview when he next calls. While, as previously stated, I do not think it possible to stop the practice of putting in services free when once it has been established, yet where services are being put in free every protection should be taken to reserve their ownership by the gas company, so far as possible.

The Round Oak Steel Range.

A gorgeous publication has just been issued by the Estate of P. D. Beckwith, Dowagiac, Mich., which deals exclusively with the Round Oak steel range. The book consists of only eight pages and a cover, but is of a character calculated to enlist more than ordinary attention. The pages are large, being 10 x 12 inches in size. The cover is an imitation of brown linen, and bears a silhouette illustration in colors of an Indian, presumably Doe-wah-jack, lighting a pipe. The reflection of the flame lights up the face of the Indian, bringing his classic features out in strong relief. The illustrations in this book are of half-tones and are perfect pictures. They show the range almost as well as if the article itself was on view. Most of them are so large that they cover a full page. The range is shown in all the various styles in which it is constructed, comprising square, with high shelf, with high closet, with high shelf and end reservoir and with high closet and end reservoir.

The Round Oak steel range is claimed to be a perfect range in every particular, distinguished in each detail by the highest quality. The body is made of 18-gauge hammered polished steel, and is bluish black in color, requiring little labor to keep it clean. The corners of the body are simply a plain bend with no break in the sheet, no castings and no rivets. This requires a very high quality of steel sheet and is somewhat harder to make. The high warming closet has a round rolling door with a perfectly flat top, making it a smooth, convenient shelf. Under this closet are monogram tea shelves, which can be folded up flat against the back when not in use. A broiling door is placed on the left end of the range, which can also be used as a feed door when burning coal. The range has two draft slides, one on the end underneath the broiling door and the other under the ash pit door. A drop door on the end of the fire box opens level with the grate, preventing ashes from dropping on the floor when using wood. The oven door is perfectly balanced with an iron weight located in a well between the ash pit and the front of the oven. The grates are combination wood or coal, which can be quickly taken out and replaced without disturbing the back, front or end linings. Two end linings are furnished with each range. The fire box has an extension on the rear end, which permits the use of 26-inch sticks, if desired, when burning wood. The bottom of the exit flue on the back of the range is protected from rust by a heavy cast iron elbow. Cast iron is used for this purpose, as creosote or dampness would destroy this flue if made of sheet steel.

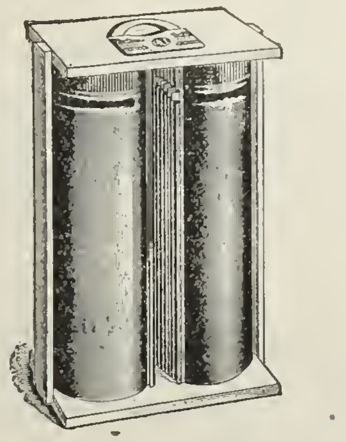
The range has an independent cast iron base, which is an improvement introduced this year. The base not only adds to the appearance of the range, but enables it to easily pass through any ordinary door. Heavy asbestos insulation is used in the construction of the range. The statement is made that the amount of asbestos used is from two to three times as much as is ordinarily used in a steel range. The reservoir is made of cast iron, white enameled, is extra large and has a round bottom from which almost the last drop of water can be dipped out. The water front furnished with this range when desired is a combination of malleable iron and pipe, and is an original construction devised by the manufacturers. This water front does not interfere with the use of the broiler door. The ornamentation of the range consists of polished nickeled work, at once plain and rich in design. A massive polished nickel rail is placed along the edge of the top in front of the range.

New Process Gas Ranges

The Standard Lighting Company of Cleveland Ohio, are sending to the trade a special catalogue devoted to the New Process gas ranges. The book is printed in black and green and profusely illustrated with half-tone engravings showing the various styles of New Process ranges and also their construction. A broken view is given of the Tangent Star burner, which is said to be durable and to promote combustion and generate intense heat. A broken view of one of the New Process gas ranges shows the movement of the air and products of combustion in the broiling oven and the baking oven, also the method of insulating with air spaces and asbestos. A picture shows the various parts of the stove unassembled, indicating how readily it may be taken apart for cleaning. In addition to the gas ranges, broilers, water heaters and hot plates are shown.

Yale Patent Lock Stove Pipe.

Hemp & Co., St. Louis, Mo., are manufacturing the Yale Russia finish patent lock stove pipe, here illustrated. The pipe is swedged and crimped so that it can be easily put together by any one, by merely pressing in the key, which securely locks it without the use of hammer or rivets, the manufacturers asserting it is impossible for this lock to slip or tear when putting it together, or after being made up. It is made of a high grade of uniform color Russia finish steel and coated to prevent rust. The feature of this construction is referred to as the great saving in freight on account of the small compass required through nesting. The pipe is paper wrapped, put up in crates containing 25 and 50 lengths, and is made in 5, 6 and 7 inch sizes, they being prepared as well to furnish all sized tapers.



Yale Patent Lock Nested Stove Pipe.

ODD PLATES.

Manager Taylor of the New York office of Isaac A. Sheppard & Co. of 312 Pearl street, has recently rearranged his showroom and provided newly painted platforms on which the Excelsior and Fidelity Ranges and Paragon Steam and Hot Water Heaters make a very attractive showing.

The Cope Pattern Works, Detroit, Mich., have decided to make an important improvement in their factory at 36 Brush street, corner of Woodbridge street. They will erect a building 31 x 60 feet and three stories high. The Brush street factory will then be of sufficient size to accommodate the company's entire business at one place, and the addition will also considerably increase their capacity. They have been doing a portion of their work at Randolph and Atwater streets, in a building which they have occupied for 11 years. The company are manufacturers of high grade Stove Patterns of every description, as well as Patterns for furnaces, hot water and steam boilers, radiators, &c. The works comprise filing, fitting and followboarding departments and a metal pattern foundry.

M. M. Corwin, 256-258 Water street, New York, has taken the agency for the Repairs for stoves made by the Thomas, Roberts, Stevenson Company of Philadelphia since that concern closed their New York branch. A full line of the Repairs for the Active Fortune Stoves and Ranges will be carried in stock for prompt shipment.

A license of incorporation has been granted to the Enterprise Stove & Sheet Metal Mfg. Company of Quincy, Ill. The capital stock of the concern is $65,000, and the incorporators are Harry F. Baker, Frank S. Seger and Henry C. Baker. The purpose of the company is to manufacture Stoves and Sheet Metal Goods. Local newspapers state that the capital stock is subscribed, and it is expected that the company will be in operation in a short time.

The United States Register Company, Limited, of

Battle Creek, Mich., manufacturers of the Jones Side Wall Warm Air Registers, will be represented by the following able corps of salesmen during 1902: Robert Jagers, who for years represented the Giblin Furnace Company, will look after their interests in New York and the New England States; H. B. Van Buren, a recognized expert on heating and ventilation, in Pennsylvania and Ohio; C. E. Blanc in Indiana and Michigan, and Fred. Redner in Illinois and Iowa. R. J. Schwab & Sons Company, Milwaukee, Wis., their Northwestern distributers, will look after the Northwestern trade through their own staff of representatives.

J. D. Smith Foundry Supply Company, Cincinnati, Ohio, are sending out a complete catalogue and price-list No. 10 of their business as manufacturers of all kinds of Foundry Facings and Blackings, importers and refiners of Plumbago, Silver and Black Lead and manufacturers of and dealers in supplies for iron and brass foundries, pattern makers, machinists, rolling mills, &c. Since issuing their No. 9 catalogue they state that they have added a number of good things to their line. They also refer to their capacity as enabling them to meet the demands of the trade efficiently and promptly.

The Caldwell Furnace & Foundry Company, recently incorporated under the laws of New Jersey, have acquired title to the furnace and foundry building formerly occupied by the Smead Company, on the corner of Bancroft street and Smead avenue, Toledo, Ohio, which they have occupied for some time.

F. M. Borden & Bro., 118-122 North Second street, Philadelphia, are sending a neat four-page circular to the Stove trade giving a list of the houses for whose goods they can furnish Stove Repairs and other things in the way of supplies. They also carry an extensive line of Gas, Oil and Gasoline Stoves and Refrigerators.

Through an error we stated in *The Metal Worker* of last week that Chalmers Trimble, who has been elected a secretary of the Mason Heater Company of Bellaire, Ohio, had become connected with the Stanton Heater Company of Martin's Ferry, Ohio. We learn that T. J. Grier, who has been connected with the Stanton Heater Company has resigned his position to assume the position of superintendent of the installation for the Mason Heater Company.

The Michigan Vapor Stove Company of Grand Rapids, Mich., show a very attractive line of Gasoline Stoves in their new catalogue. One of the features of the Stoves is the special construction of the burner. The company state that they have received orders in excess of their producing capacity this year.

The Charter Oak Stove & Range Company, St. Louis, Mo., have recently issued to the trade a circular letter, calling attention to the small stock of pig iron on hand at the furnaces and in the yards of foundries, and to the fact that in many branches of labor connected with the Stove and Range industry wages have been advanced. Reference is made to the conference recently held between representatives of the workmen employed in the Stove and Range factories of the United States and their employers, at which the demand for higher wages was granted and went into effect on April 1. As a consequence of these conditions the company find it necessary to withdraw quotations heretofore made and to invite correspondence concerning ruling figures. They urge their customers to supply wants as early as convenient, as the stock of Stoves and Ranges in the hands of makers is small, and the opinion is expressed that if the crops are favorable this year the demand for goods is likely to be larger than the supply.

At a meeting of the stockholders of the Wireton Heating Company of Blue Island, Ill., on April 11, it was voted to change the title of the concern to the Quaker Mfg. Company, and to increase the capital stock from $50,000 to $100,000. Bids for the company's new plant at Chicago Heights, Ill., were opened this week. The company have arranged with a large Stove manufacturing concern to make their castings and have leased the Allerton lubricating plant, at Grand Crossing, Chicago, for the purpose of manufacturing their Furnaces, Time Regulators and Registers until the new plant is completed.

The plant of the Phillipsburg Stove Mfg. Company, at Phillipsburg, N. J., is reported to have been leased by Hobson & Co. of New York, who will shortly put the works in operation, manufacturing Machine and Stove Castings and Stoves.

Washington Stove Dealers' Association.

The annual meeting and banquet of the Stove Dealers' Association of Washington, D. C., was held on April 2, at their hall, 514 Ninth street. Previous to the banquet the following officers were elected for the ensuing year:

President, F. S. Hodgson.
Vice-President, W. S. Jenks.
Secretary, J. A. Pierpoint.
Treasurer, Charles Johnson.
Trustees: I. B. Dodson, T. Sauer, Henry Hammond, Joseph Maltby, W. T. Hutchinson, and A. S. Johnson.

After disposing of an elaborate *menu* a number of entertaining speeches were enjoyed by the diners. President Hodgson performed the duties of toastmaster in a graceful manner.

Show Window Lighting.

How windows should be lighted is a matter of grave consideration, especially in the winter time, says the *Drapers' Record* of London. Electric lighting has opened up great possibilities in this direction. We may, however, have too much of a good thing. The many miserable failures in this direction are plainly to be seen in most large towns. Occasionally one drops across a success.

A window seen recently was lighted solely by electricity at the top. Shades are so arranged as to cast down a flood of light on the goods in the window below. Instead of casting a flood of light on to the footpath, the lights nearest the plate glass front are shaded so as to throw the light inside, and right on to the goods. This is a great comfort to the window gazer—ofttimes a customer. Instead of the eyes being dazzled with the light, they can look comfortably on the stock displayed in the window. The goods stand out boldly, and can be surveyed like a shaded picture.

Another tradesman favors the lights being at the bottom of the window, nearest the glass, and shaded so as to throw the light upwards. In this case also the lights are shaded at the front, so that the shaded glare falls on the goods, and not on the eyes of the onlooker.

Some shops are one garish blaze of electric light, unshaded, or nearly so. These are pronounced successes where glare is wanted, but they are sad failures often as a means of selling the articles on view. People not accustomed to the new light cannot bear the unshaded glare, and so the object of the tradesman is not attained. Experts in these matters should be consulted. If the result is not successful another system of arranging the lights should be tried.

Ricinate Fire Proof Paint.

Richmond Supply Company, Richmond, Va., as sole agents, are calling attention to the Ricinate fire proof paints and kalsomine. The company claim that wood painted with Ricinate takes from 200 to 300 degrees more heat to set it afire than when painted with non-fire proof paint; that wood covered with it will not blaze when set on fire; and that Ricinate wears and weathers as well as, and costs little, if any, more than, high grade non-fire proof paints. The company issue a circular containing testimonials from manufacturing and other concerns who have used the paint. It also directs attention to their Dura Asphalta, which is referred to as a highly elastic paint for roofs of factories, warehouses and residences.

Marth & Gunderson, Neillsville, Wis., have added a Stove department to their Hardware business and desire to receive catalogues and prices from Stove manufacturers. They will handle a cheap line of Cooks and Ranges in addition to a leading line of high grade goods.

Clark's Gem Flue Stops.

Illustrations are herewith given of a line of flue stops recently placed on the market by the J. L. Clark Hardware Company, Rockford, Ill. The Gem flue stop which they have devised is designed to meet the demand for a flue stop simple in construction, capable of being easily and quickly put in place, and packing flat for shipment.

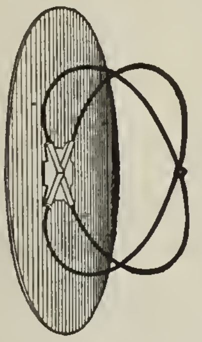


Fig. 1.—Flat Stop.

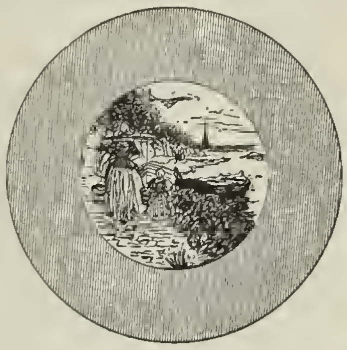


Fig. 2.—Front of Flat Stop.

Fig. 1 illustrates the method of fastening adopted for the higher grade of these goods. This consists of two wires, which are arched in form and cross at right angles to each other. These wires are notched at the point of crossing, thus locking them securely. In this manner, it is pointed out, four points of contact are secured instead of two, as is the case with most stops. Fig. 1 is a perfectly flat stop, which can be easily papered over if so desired. This is a novelty in the trade, as it is believed that a flat stop has not before been brought out. Fig. 2 shows the front of this stop, a neat design having been adopted for the purpose of ornamentation. Fig. 3 is a brass finish stop, raised and embossed, having an artistic chromo fastened at the center, as shown in Fig. 4. From the form of the wires the greatest holding power is secured. The socket for the wires is raised from the stock itself, which prevents any melting and dropping down, which is likely to happen when a cleat is soldered at the center. Fig. 5 shows the Crescent stop, which is designed to fill the demand for a cheap article which may be sold to the consumer for so small a price as 5 cents. The wire loop has been adopted, as the company have found from experience that it holds the stop in position in the flue more securely than a band. All the dies for the manufacture of these stops are of the latest design, and the blanks are stiff and rigid. The wire loops fold perfectly flat, thus facilitating the packing of the goods to occupy small space.

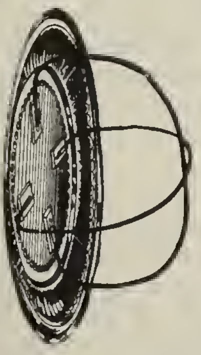


Fig. 3.—Brass Finish Stop.

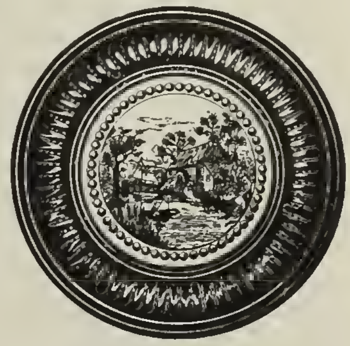


Fig. 4.—Brass Finish Stop, with Chromo.

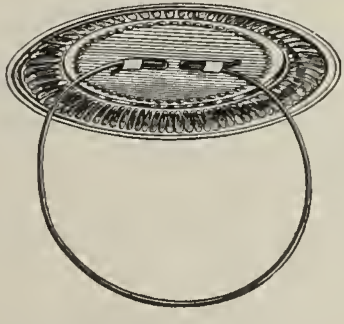
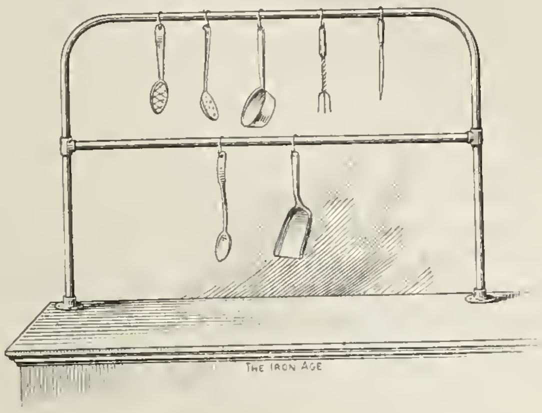


Fig. 5.—The Crescent Stop.

A PIPE RACK FOR DISPLAYING KITCHEN UTENSILS.

In the accompanying illustration is shown a rack made of 1-inch water pipe that is placed on the back of a counter in the store of Stark Bros., Stamford, Conn. From this are hung small kitchen and household utensils by means of copper wire bent with a hook at each end. This rack serves as a convenient way of bringing to the attention of customers a line of small articles that are frequently lost sight of in the store.



A Pipe Rack for Displaying Kitchen Utensils.

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Herrick Refrigerators.

Herrick Refrigerator Company, Waterloo, Iowa, have issued a new catalogue of their Herrick (Northey's patent) sanitary refrigerators, ice chests, fish boxes, ice cream cabinets and cans, display cases and coolers, florists' cases, &c. In addition to making all kinds of family and other refrigerators, they also furnish butchers', grocers', creamery, hotel, medical and saloon coolers. For their refrigerator work they use odorless spruce, white enamel or white opal glass linings. They call special attention to their No. 2 enamel refrigerator, which they say never fails to make sales where the merchant gives it a place in his show window, and also to their white opal glass lining refrigerator for high class trade. The company give exclusive agency to one agent in each city on all sizes under No. 9, with the privilege of selling No. 9 and larger sizes if he can. They state that they are now building a large addition to their factory, 100 x 100 feet, which will enable them to take better care of their trade than ever during the season.

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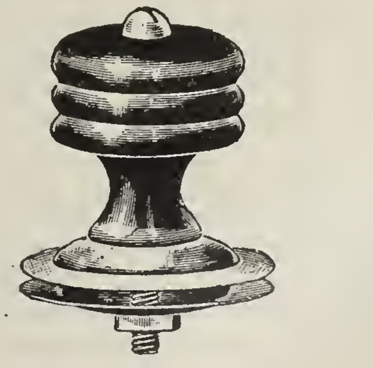
Enameled Repair Knob.

Paxton Hardware Mfg. Company, Paxton, Ill., are putting on the market the enameled repair knob shown full size in the accompanying illustration. This knob is intended for use on lids of tea kettles, tea pots, coffee pots, &c., and by its employment, it is pointed out, burned fingers in handling these utensils may be avoided. The device comprises a good sized strong enameled knob and a 1½ x 5-32 stove bolt. The tin parts are neat and smooth. The knobs are furnished in bulk, in neat pasteboard boxes, three dozen to a box, and mounted on display cards, three dozen to a card.



Enameled Repair Knob.

Stove and Hardware Dealers.

Stratton & Terstegge, Louisville, Ky., are sending out a spring catalogue containing only such goods as they carry in stock and are suitable for spring sale. It contains 60 large pages, and covers Sewing Machines, Oil and Gasoline Stoves, Oil Cans and Tanks, Clothes Wringers, Washboards, Freezers, Preserving Kettles, Milk Utensils, Bird Cages, Water Coolers, Steel Goods, &c.

L. F. Holloway & Co. have engaged in the Hardware, Stove, Agricultural Implement, Plumbing and Tinsmithing business in Fremont, Neb., succeeding Hobbs & Jones. The new firm are making a number of improvements in the store and adding to the stock.

Womacks & Kirby have succeeded W. N. Womacks in the Hardware, Stove, Agricultural Implement, Buggy and Sporting Goods business in Blue Springs, Mo.

J. C. Scott, Roscoe, Texas, has bought the business of the Roscoe Mercantile Company and removed the stock to his establishment. Mr. Scott now deals in Shelf and Heavy Hardware, Stoves, Tinware, Agricultural Implements, Sporting Goods, &c.

Henry Soule has disposed of his Hardware, Stove and Sporting Goods business in Trimble, Mo., to O. E. Conneil.

Foster Hardware Company have succeeded J. H. Parks in the Shelf and Heavy Hardware, Stove and Tinware business in Lorimer, Iowa.

H. L. Hahnenkratt and L. C. Ames, formerly of Phillipsburg, Kan., have entered the Hardware business in Washington, Kan., under the style of Hahnenkratt & Ames. Besides Hardware, they will deal in Stoves, Tinware, Sporting Goods, Wind Mills, &c.

The Wilson Hardware Company have succeeded Wilson-Beemer Hardware Company, Washington, Iowa, wholesalers and retailers of Shelf and Heavy Hardware, Stoves, Tinware, Furnaces, &c.

The Ingram-Richardson Company, Beaver Falls, Pa., have just booked an order for 100 dozen Enameled Iron Washboards, to be sent to the Philippine Islands.

The Lalance & Grosjean Mfg. Company of New York City are distributing a neat little pamphlet, printed in two colors and tastefully illustrated, on the subject of the company's Agate Nickel Steel Ware. The special recommendations of this ware are set forth in an entertaining manner, and a number of illustrations of various utensils are presented, together with a view of the company's large factory at Woodhaven, L. I.

We have received from the S. M. Howes Company, 40-46 Union street, Boston, Mass., a package of circulars relating to the line of Refrigerators made by the Gurney Refrigerator Company of Fond Du Lac, Wis., for which concern they are the New England agents. These include the Gurney, La Belle and Cold Wave Refrigerators. A special leaflet illustrates and describes the single door Gurney Refrigerator, which is one of the latest constructions of the company. This Refrigerator is furnished with the Gurney patent sliding, adjustable shelf, also a removable galvanized ice compartment, and all of the other special features found in the Gurney Refrigerators. These Refrigerators are made in a new factory by new and improved machinery of the best available materials.

Phillips, Yarbrough & Allen have bought out the retail Hardware and Stove business of L. F. Dickson, at Opelika, Ala. The new firm propose to greatly extend the business and will be glad to receive catalogues and price-lists from manufacturers in their line.

C. W. Lord & Sons have succeeded the firm of Lord & Cope in the Hardware, Stove and House Furnishing business at Dover, Del.

A new departure has been taken in trade methods by the Lalance & Grosjean Mfg. Company of New York, who have established in two of the large department stores of the city—one in Manhattan and one in Brooklyn—a representative who conducts a demonstration of the company's Agate Enameled Ware. The demonstrator explains to the public the special merits of this class of Enameled Ware, and informs them of the manner in which the utensils are manufactured, so as to bring out the superiority of the goods in a most convincing manner. Naturally those who hear the lecture are impressed with the excellence of the Lalance & Grosjean Enameled Ware. As a result they proceed to provide themselves with a battery of Agate Kitchen Utensils, and furthermore become missionaries in spreading the reputation of the Ware among their friends and neighbors.

E. Buskett & Co. have opened a new store at Attica, Kan., and are making a specialty of Hardware, Stoves, Tinware and House Furnishing Goods.

The Osborn Mfg. Company, makers of the Osborn Metal Bird Cages, have removed from their old factory, at 79 Bleecker street, New York, which they have occupied for 32 years, to more commodious quarters at 669-685 Hudson street, corner of Fourteenth street. In the new quarters the company will be provided with twice the amount of floor space and much better showroom facilities than they previously possessed. They propose bringing out several new styles of Cages.

William H. Dolan has opened a retail Hardware, Stove and Tinware store at Fishkill Landing, N. Y.

The Nickel Plate Stove Polish Company, Chicago, are distributing illustrated circulars calling attention to their Peerless Iron Enamel, an air drying Enamel of a brilliant jet black color, which, it is claimed, will never wear off. This Enamel is put up in self sealing cans with brushes and screw top cans without brushes, and is especially adapted for family and general use.

The Triumph Adjustable Stove Pipe Mfg. Company, Joliet, Ill., have issued illustrated circulars describing their specialties. They manufacture under their own patents the Triumph Adjustable Stove Pipe, which is so simple that a boy can put it up or take it down. The Pipe requires no wiring to hold it in place, but after the joints are put together they are practically one length of pipe, and will not sag or come apart, but will stand perfectly true with ceiling and wall. The Pipe is made in the usual length and nested for shipment. The nesting is also an advantage to the user, as the Pipe can be taken down in the spring, cleaned and nested so as to take up very little room. The company also manufacture the Barclay Knockdown Stove Pipe, which is not adjustable but has the advantage of nesting for shipment. The Barclay Pipe has the same joints as the Triumph Pipe but differs from the latter in the manner in which it is locked. One of the circulars gives a number of testimonials from those who have handled the company's Pipe.

B. L. Spofford has lately opened a store at Waltham, Mass., carrying Hardware, Tinware, &c.

Roberts & Connell have been succeeded by Roberts & Vernon in the Hardware, Stove, Farm Implement and Sporting Goods business in Lewiston, Mo.

Brownell Bros. have purchased the Hardware business of the E. E. Stewart Company, Hailey, Idaho, wholesale and retail Shelf and Heavy Hardware, Stoves, Tinware, Agricultural Implements, Sporting Goods, &c. The new proprietors will soon incorporate as Brownell Bros. Company, with a paid in capital stock of $25,000.

The Farmers' Hardware Company, Saratoga Springs, N. Y., are just starting in business as dealers in General Hardware, Farming Implements, Stoves, Tinware, Paints, Glass, &c., and would be glad to receive catalogues and price-lists.

Geo. H. Taylor, dealer in Shelf Hardware, Stoves and Tinware, Agricultural Implements, Sporting Goods, and also Plumbing, Heating, &c., Wakefield, Mass., desires catalogues and other printed matter relating to these lines.

J. C. Wright, dealer in Hardware, Stoves, Sporting Goods, Agricultural Implements, Harness, &c., Ashland, Neb., has been succeeded by Wright & Stone. The firm have doubled the stock formerly carried.

The Manitowoc Aluminum Novelty Company of Manitowoc, Wis., have opened an English salesroom at 7 New Union street, London. They are represented in New York City by S. B. Thorp, 290 Broadway.

HEATING ENGINEERS' SUMMER MEETING.

Under date of April 12 Secretary Mackay has issued a call for the fifth semiannual meeting of the American Society of Heating and Ventilating Engineers, to be held at Atlantic City, N. J., on Monday, June 16. The place for holding the meeting and the hotel accommodations will be announced later. An invitation is given to the members to prepare papers and to send them in as early in May as possible, so that they can be distributed to the members before the meeting. The members are also invited to present any topics that they desire to have discussed.

President A. E. Kenrick announces the appointment of the following Committee on the Grate Area of Boilers Relative to the Radiation in Buildings: A. S. Hamlin, 84 Beekman street, New York; J. A. Gorton and James Mackay. This committee were appointed in accordance with the request made at the annual meeting in January. The committee would be glad to hear the views of all interested in the subject.

Announcement is also made of the appointment of the following Committee on Uniform Contract and Specification: S. A. Jellett, 245 North Broad street, Philadelphia; W. H. McKeever, H. J. Barren, R. P. Bolton and F. A. Williams of New York. This committee is considering a form of uniform contract intended to comply with the laws of all States and to cover all special points in every line, such as rights of lien, questions on trespassing on adjoining property, injuries to men, &c., and they solicit the views on these subjects of members in different sections of the country, asking that they be placed in their hands previous to May 15.

The members of the special committee for making the tenth annual meeting of the society a special anniversary meeting are invited to consider the subject and to be prepared to discuss it at a meeting of the committee, to be held at Atlantic City during the summer meeting in June.

Acetylene Lighting a Field for Plumbers.

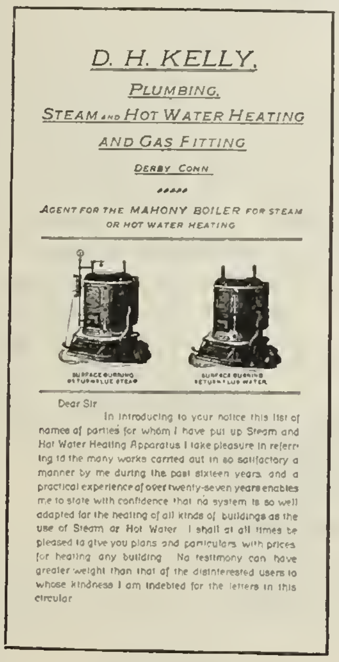
Acetylene is not ranked as a new subject now, says the *Plumber and Decorator* of London, England, yet it is so new that hundreds of plumbers who might be pushing it, and making money by carrying out the work, have not yet taken hold of the sale of the generators. Small blame to them if they have good reasons; but it is desired to say right here that acetylene is a living, practical means of lighting, and plant and piping for this means if illumination can be fitted up without difficulty and in a manner that will give perfect satisfaction. Failures there have been, and doubtless there are some to come, but this is no reason whatever for hesitating to become proficient. Acetylene has got such a foothold, thanks to some pushing, earnest men, that practically every plumber, sooner or later, must take it up. So why not now? It is very simple, but not simple enough to start without a knowledge of the subject, yet it is not beyond any one's learning.

It is quite within the range of possibilities that every country residence of fair size, the owner of which can afford a moderate priced lighting plant, will be lighted by acetylene. There are a good many perfect installations being put in now, and they create just as great an enthusiasm as the failures created distrust, or worse. One user of acetylene, an able man at the head of a great college, says he would not now have coal gas (let alone lamps) even if a gas company's mains were brought past his buildings. There is no doubt about acetylene being a more satisfactory and pleasing gas than that derived from coal.

Acetylene costs considerably less than coal gas in country places. Theoretically the former gives a light equal to coal gas at 60 cents per 1000, the figure being arrived at in this way: Coal gas gives a 16-candle power light burning 5 feet per hour; in other words, 3200 candles for one hour. Calcium carbide costs 4½ cents per pound, and this quantity has a lighting value of 240 candles for one hour. Therefore, to obtain 3200 candles for one hour, 13 1-3 pounds of carbide must be purchased, costing 60 cents. This, as stated, is the theoretical cost and, as usual, the practical and actual figures are different. There is factor's profit on the carbide, carriage of same, interest on the outlay incurred in fitting up the plant, &c.

A HEATING CONTRACTOR'S CIRCULAR.

Commendable enterprise is shown by D. H. Kelly, Derby, Conn., in the circular which he has prepared for distribution with the purpose of increasing his business as a heating contractor. The accompanying illustrations show the four pages of this folder, much reduced in size, the real size of the pages being 5¾ x 11½ inches.


D. H. KELLY,

PLUMBING,

STEAM AND HOT WATER HEATING

AND GAS FITTING

DERBY CONN

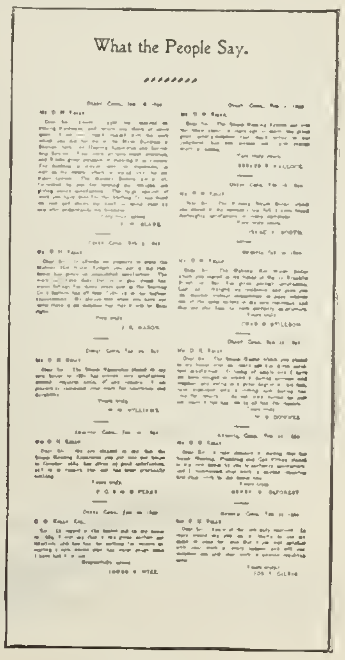
AGENT FOR THE MAHONY BOILER FOR STEAM OR HOT WATER HEATING

SURFACE BURNING RETURN FLUE STEAM
SURFACE BURNING RETURN FLUE WATER

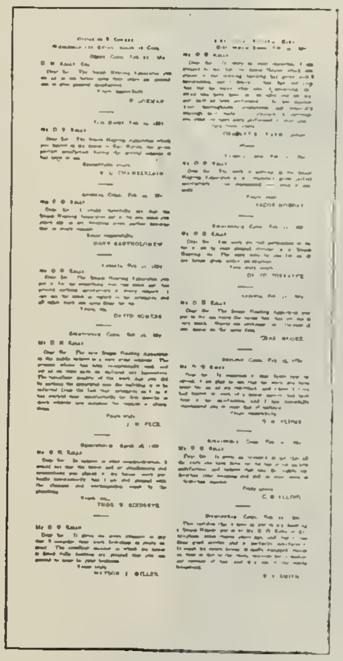
Dear Sir

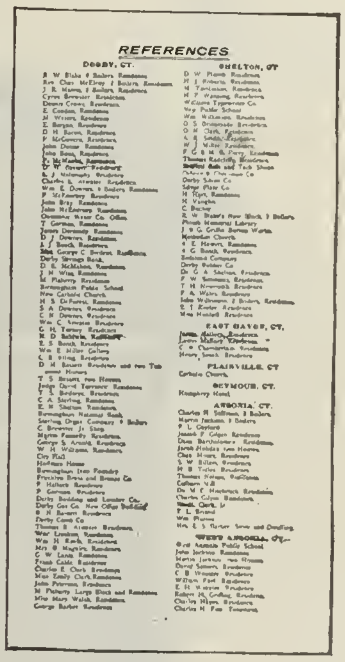
In introducing to your notice this list of names of parties for whom I have put up Steam and Hot Water Heating Apparatus I take pleasure in referring to the many works carried out in so satisfactory a manner by me during the past sixteen years, and a practical experience of over twenty-seven years enables me to state with confidence that no system is so well adapted for the heating of all kinds of buildings as the use of Steam or Hot Water. I shall at all times be pleased to give you plans and particulars with prices for heating any building. No testimony can have greater weight than that of the disinterested users to whose kindness I am indebted for the letters in this circular.

First Page.


What the People Say.

Second Page.


Third Page.


REFERENCES

DERBY, CT.

SHELTON, CT

Fourth Page.

A Heating Contractor's Circular.

On the first page of the circular Mr. Kelly refers to the many plants he has installed with satisfactory results during the past 16 years, and calls attention to the fact that he has had 27 years of practical experience in the business. On pages 2 and 3, under the heading of "What the People Say," are given letters from prominent residents and business men of Derby, Ansonia and neighboring towns, which testify to the satisfactory way in which systems installed by Mr. Kelly have worked. The last page bears a list of residences, stores, factories, public buildings, &c., in which steam or hot water plants have been installed by him.

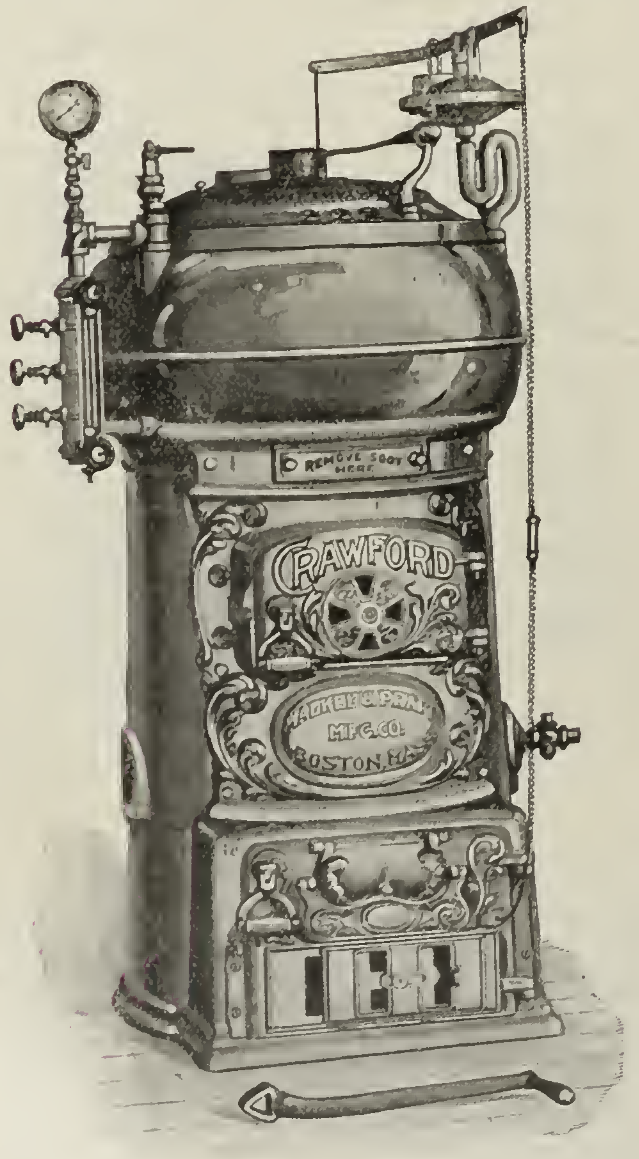
Mr. Kelly says that whenever he hears of a new building being erected and is unable to call on the builder personally, he sends one of these circulars with his letter, requesting that he be permitted to bid on the heating plant. When he does this he generally adds in ink two or three names at the bottom of the last page, giving the plants he has most recently put in. He has found that this circular impresses prospective customers very much, showing to them that he has put in a great many of the best plants in the locality.

A Steam Test.

Naked steam pipes are still quite common, to say nothing of boilers exposed to constant drafts wholly unprotected as to their shells. The loss of fuel by this neglect is very large, increasing with the size of the superficial areas, and very few steam users are aware of the expense entailed by uselessly heating the atmosphere. George H. Barrus lately tested the steam system at the Manhattan Railway power house in this city with the following results: A 2-inch steam pipe 100 feet long, under 80 pounds pressure, lost by condensation in pounds of water per hour when covered only 15.14 pounds, while uncovered the condensation was as a maximum 60.30 pounds of water; under 100 pounds of steam per square inch the greatest condensation was for the same pipe 72.20 pounds. A 10-inch pipe 35 feet long under 100 pounds pressure, naked, lost, maximum, 112 pounds of water per hour by condensation; when covered this was reduced to 15.93 pounds as a maximum. The temperature of the room where the experiment took place was 50 to 75 degrees F. Comment seems unnecessary.

The Crawford Boiler.

One of the latest constructions of interest to the steam and hot water trade is the new Crawford boiler that is being put on the market by the Walker & Pratt Mfg. Company, 31-35 Union street, Boston, Mass. A general view of the boiler with steam trimmings is presented in Fig. 1. The boiler is of circular form and of the horizontal sectional type. The fire chamber section, by means of corrugations, presents a large surface and the upper horizontal sections, over which the products of combustion play, are also provided with an increased surface by means of corrugations, as shown in Fig. 2. The upper sections are arranged with staggered openings, so as to secure an indirect draft and at the same time effect both economy in fuel consumption and a high efficiency in heating. The boilers are made in five sizes, having 20, 22, 25, 28 and 32 inch grates, and are rated to carry from 475 to 1300 square feet of direct hot water radiation, and from 300 to 850 square feet of direct steam radiation. The boilers are well adapted for use in low cellars, the largest size, with steam trimmings, standing but 61 inches in hight. It is pointed out that the construction enables the boiler to be readily set up by the steam fitter, while the different parts are of a size that enables it to be readily taken into a building through the usual doors and windows. The company are distributing an eight-page catalogue giving a number of half-tone engravings showing different parts and giving full explanation and tables of dimensions.



The Crawford Boiler.—Fig. 1.—General View of Steam Boiler.

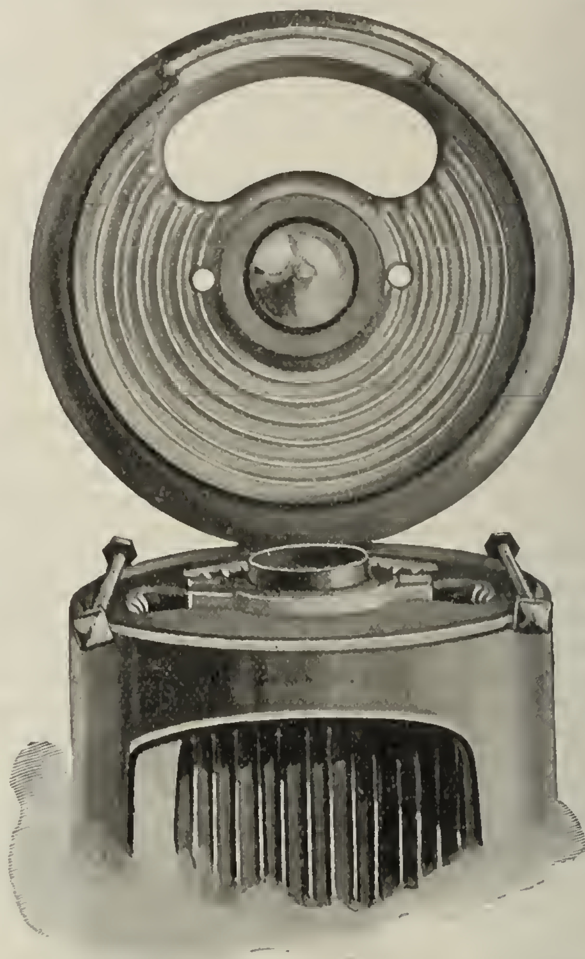


Fig. 2.—Interior View.

Radiator Tests.

Experiments just completed at Sibley College, Cornell University, by H. F. Moore and E. Schlemmer on " A Radiator Test with Superheated Steam " confirm previous results as reported by Professor Carpenter—viz., that the heat transmitted per degree difference of temperature between entering steam and the air of the room is decreased as superheating is increased. This general result is not particularly astonishing, but a record of the tests may be of some interest.

Summary of Tests.

	Number of trial.					
	1.	3.	5.	6.	7.	8.
Steam pressure, absol..	16.01	16.8	17.65	17.14	17.56	17.85
Degrees superheat.....	0.0	26.9	56.0	87.9	104.9	124.3
Heat radiated per hour per degree..........	41.55	34.74	30.0	24.5	24.22	21.7
Same per square foot surface	1.405	1.173	1.014	0.827	0.819	0.734

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Bids will be received until May 15 by S. P. Selfert, 326 Dale avenue, Roanoke, Va., for steam heating and plumbing the Elks' Home, at Roanoke.

CLEANING A HOUSE TANK.

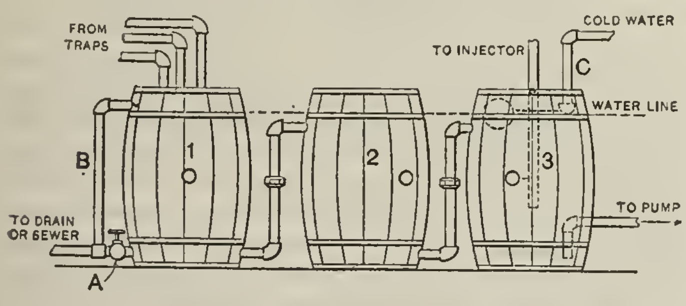
BY D. F. N.

A great deal of damage is often done to a good plumbing system through ignorance or negligence on the part of the owners or engineers of buildings by not taking proper precautions when cleaning a house tank. When the water shows itself murky, instead of employing a plumber to see that the tank is cleaned in the proper manner the owner, particularly of a private dwelling, will often send some servant up to clean the tank. This is a kind of job that is distasteful and it is hurried through with as soon as possible. The water supply is shut off, then all the water is drawn off from the tank at some one of the different fixtures in the bathroom below. When the sediment or mud, which has settled at the bottom of the tank, is reached, a servant takes pains to sweep or force down the falling supply line as much of the mud as he can, being ignorant of the result of such work. The disadvantage of this course will show itself as soon as the tank is filled again. All of the cold supply lines to bathrooms and under floors will be found to be more or less choked with mud, and also the water back in the kitchen ranges. An instance has come under my observation where the tank had not been cleaned for a long time and slimy mud had formed above the outlet and stopped it up. It was cleaned carelessly, as described, and many of the cold water supply pipes were filled with mud, making several days' work for the plumber to clear them. The proper way to clean a tank is to empty it to within about 6 inches from the bottom and close all of the pipe openings with round, tapered soft wood plugs. The solid matter should then be removed and the tank scrubbed and the dirty water taken up in pails and poured into the gutter. The solid mud can be disposed of in the ash cans. This method prevents the pipes from being choked and insures the tank being clean.

Apparatus for Removing Oil from Exhaust Steam.

A simple, home made device for removing oil from the condensation of exhaust steam is described as follows by a writer in *Steam Engineering:*

This apparatus is to be used where the returns come through steam pipes. Get three whisky barrels and connect them by 1¼ or 1½ inch pipes, as shown in the sketch. The drips from the traps flow into barrel No. 1. The barrels are open at the top, as no pressure is carried in any of them. When all the barrels fill to the water line indicated, the oil and scum will be taken off by the overflow pipe B; if enough water does not come from the drips to keep the barrels filled to the water level, the deficiency is supplied from the cold water pipe C. By opening the valve A barrel No. 1 can be drained out, and also any oil and scum that has worked through into barrel No. 2 will run out through the pipe connection into No. 1. The cold water feed will then wash out barrel No. 1. Of course valves may be put in the bottoms of barrels Nos. 2 and 3 to drain them completely, but I do not consider it necessary.

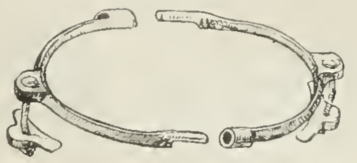


Apparatus for Removing Oil from Exhaust Steam.

THE contract for heating and plumbing the Haskell Memorial Library has been awarded to the Rock Island Hardware Company of Derbyline, Vt., and Rock Island, P. Q.

The Granton Adjustable Hopper Clamp

In the accompanying illustrations we show the Granton adjustable hopper clamp, put on the market by Clifton A. Granton, 5 West street, Haverhill, Mass., for which he has taken out a patent. A general view of the clamp is shown in Fig. 1. It consists of two castings arranged to encircle the earthen or cast iron short hopper bowl, and is provided with a lug and a socket to make, when connected, one continuous rigid clamp, to insure greater strength and evenness of pressure when the bolts securing it to the trap are tightened. Fig. 2 shows the clamp connecting a hopper bowl with a trap. It is claimed that where this clamp is used it is not necessary to use legs on the water closet seat. It is also pointed out that the plumber saves considerable time and some labor by its use, as compared with the common clamp. Mr. Granton issues a circular giving full particulars in reference to the clamp and its construction.



The Granton Adjustable Hopper Clamp.—Fig. 1.—General View.

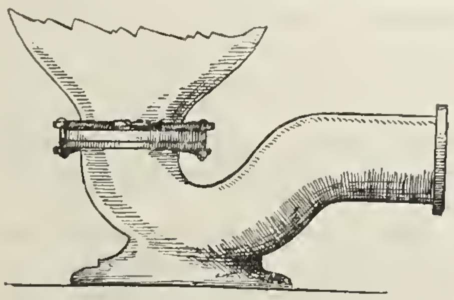


Fig. 2.—Showing Clamp in Use.

Electric Heating.

Electric heating makes way but slowly, says the *Western Electrician.* It is good, but expensive. It is very convenient—almost indispensable, in fact—on large electric cars; but what a demand it does make on the power house! In the power plant of the Northwestern Elevated Railroad it is shown that in severe weather from 20 to 50 per cent. of all the current sent out on the line is used in heating the cars. So if electric heating and cooking could be generally introduced it would be a fine thing for the central stations, but rather hard on the householders. However, special appliances for utilizing electric heat continue to be brought out. Thus, a German company announce an apparatus for the heating of goods exposed in show windows for the prevention of the settling of steam or ice on the window panes. The device consists of an iron frame, in which a number of wires are fixed in such a manner as to prevent a short circuit. The heating resistance is so calculated as to exclude superheating, even by maximum load. The contrivance has the advantage that it is not necessary to disturb the goods when turning the heat on or off, as this may, of course, be done by means of a switch fixed anywhere in the shop. It is also less dangerous than the open gas burners sometimes used for this purpose. In special applications such as this and in use with certain kinds of tools electric heating seems to find its greatest utility outside of the warming of passenger cars.

THE annual convention of the National Association of Master Plumbers of Australasia opened in Adelaide, South Australia, on April 1. Delegates were expected to be present from Victoria, New South Wales and other provinces of the Australian Federation. Among the special features of the convention were to be the reading of several important essays and the discussion of the report of the Sanitary Committee.

ASSOCIATION NEWS.

Paterson Master Plumbers.

After being for some time without a Master Plumbers' Association, the plumbers of Paterson, N. J., are again to have an association. On April 9 the master plumbers met at the shop of Robert Quinn, 9 Fair street, and perfected their association, deciding to call the organization the Master Plumbers' and Heating Engineers' Mutual Protective Association of Paterson. The following officers were elected for the ensuing year:

President, James H. White.
Vice-President, E. A. Marcey.
Secretary, Robert Quinn.
Financial Secretary, George S. O'Neil.
Treasurer, Andrew J. Fielding.

The association already has 25 names on its roll, and others who were unable to attend the meeting will join at the next meeting. The following Conference Committee was appointed: James T. MacNab, James Davenport, Jr., Robert Quinn and Isaac Storms.

Master Plumbers' Association of Pennsylvania.

The annual convention of the Master Plumbers' Association of Pennsylvania was held in Altoona on April 15. The reports of the officers showed the association to be in a flourishing condition. After the transaction of the routine business of the association the following officers were elected:

President, Gregor Drummond of Philadelphia.
First Vice-President, E. J. Cake, Reading.
Second Vice-President, S. S. White, Pittsburgh.
Third Vice-President, O. L. McCartney, Altoona.
Secretary, Howard Smith, Philadelphia,
Treasurer, John H. Birchall, Allentown.

Pittsburgh was selected as the place for holding the next convention.

The regular monthly meeting of the Master Plumbers' Association of Northwestern Pennsylvania was held at Cambridge Springs on April 10.

The convention of the Connecticut State Association of Master Plumbers is to take place in Masonic Hall at Bridgeport, Conn., on Wednesday, May 14, and the annual banquet will be held in the Atlantic Hotel, Bridgeport.

Charles J. Boyd, president of the Illinois Master Plumbers' Association, is making an extended business trip through the State in the interest of the association.

New York City Notes.

The wage question is agitating the minds of many connected with the building trades at present, a general advance having been demanded, and in some cases granted. Bricklayers have signed an agreement with their employers for a year from July 1 at an advance of 5 cents an hour. The plasterers' laborers are demanding $3.50 a day in Manhattan. Tile layers and marble men also want an advance. The Brooklyn plumbers have been on a strike since the 15th inst., demanding $4 a day at once, and saying if that is not given $4.25 will be the next demand. The Manhattan journeymen plumbers are asking $4.50 a day from May 15.

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There is a considerable amount of big work in the market, some of which has been contracted for already; but whether it will stand for these advances is a problem, as there are many men in all lines out of work at present.

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A few Brooklyn master plumbers, with time limits and without strike clauses in their contracts, have given in, and are paying the increased rate of wages demanded, but the majority are holding out as yet.

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Mayor Low has finally made the long expected changes in the Examining Board of Plumbers, appointing William Montgomery of Manhattan in place of John Renehan, and Edward Macdonald of Brooklyn in place of Edward Haley, as representing the master plumbers, and David Jones of the Bronx in place of James E. McGovern, as representing the journeymen. The new board is thoroughly representative, and all members are good organization men.

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John Byrns is plumbing the new residence of George Gould, at Lakewood, N. J. Mr. Byrns, who has been confined to his house for some weeks with inflammatory rheumatism, is now attending to business again.

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A. W. Reynolds of 2110 Broadway has the plumbing contract for a nine-story apartment house, at 24 West Forty-fifth street. Charles Stuart of 1027 Lexington avenue will soon begin work on the new West End Theater, at 125th street and Columbus avenue.

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J. L. Fruin of Chicago is in the city. He was a welcome guest at the last meeting of Manhattan Branch.

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At a meeting of Manhattan Branch on Tuesday the following were elected delegates to the meeting of the National Association, at Atlantic City, June 17-19: Andrew H. Brown, B. F. Donohoe, Philip Brady, T. A. Hill, A. W. Reynolds, T. J. McCormack, Wm. Kirchhof, Thomas J. Tuomey, M. J. O'Brien, Edward J. Brady, Alex. Bryant, Thomas J. Cummins, Gen. Geo. D. Scott, John Byrns, John Mitchell, Samuel L. Malcolm, Thomas F. Gaynor, James Gillroy, J. A. Rossman, Henry G. Gabay, Isaac J. Brown, John Renehan, P. J. Andrews, Edward J. Riordan, Patrick Brady, Adam Huston, E. J. Renehan, Henry J. Pattison, I. O. Shumway, Thomas Martin, James Smith, F. S. Cochrane, Jr., Frank Reynolds, Louis H. Strob, Joseph W. O'Brien, Philip Smith, William J. McDermott, James O'Brien, A. E. Jackson, Joseph T. Coyle, Thomas F. McCaul, Charles Tucker, Samuel Klein, John W. Cooney, James F. Kelly, John Toumey, Matthew F. Donohue and Charles A. Walsh.

INFECTED WATER.

How Microbes Are Conveyed Into the Human System.

While typhoid fever is chiefly a water-borne disease, says a special contributor to *Fire and Water*, the microbe which causes it to be developed in the system need not necessarily be conveyed into the stomach and bowels through the medium of water or any other liquid. After a flood or freshet, the deposit left upon the banks of a river in which the typhoid germ is present dries up, or is frozen, and turns to fine, almost impalpable dust. This is absorbed into the system through the nose and mouth. Thus dust particles aided by the wind are vehicles for spreading the disease. City houses that are closed in the summer, when reopened in the autumn, abound in accumulations of dust which, on examination, are found to be full of pathogenic germs, all of which have been blown in through the windows and other points of entrance from the streets, and are such as are found in the dejecta of horses and other animals. These microbes are very hard to kill, and multiply with amazing rapidity when they have once found a nest in which to breed.

A case in point is afforded by an outbreak of typhoid fever which took place some years ago in Athens. The nucleus of the germs was found to be a group of laborers who were engaged in excavating the soil in a street through which a sewer had once been turned up and exposed. These men probably carried the germs away with them in their clothing and on their persons, while at the same time the wind caused the typhoid dust particles thus disturbed by the excavation to be carried to certain parts of the city.

In Heligoland, also, where the hygienic conditions should be almost perfect, as the island is exposed to every wind that blows up and down and across the German ocean, there have of late years been many cases of typhoid fever, the cause of which for a long time puzzled the local doctors. Its origin, however, was finally traced to a certain house, in which there had been a case of typhoid fever. The sickness had been hidden from the doctors, so that the cottage had never been disinfected. It was also learned that, in accordance with the primitive customs of the island, where there is no sewerage properly so called, the dejecta of the patient had been thrown over and upon the cliffs—the method usually followed by the Heligolanders in disposing of their sewage. The unwholesome matter thus left to dry in the sun became desiccated and pulverized. It was scattered broadcast over one district in the form of typhoidal dust, and, in addition to being absorbed into the system by means of the nose and throat, was taken direct into the stomach and bowels, owing to the germs being conveyed to the open-air cisterns in which the rainwater is stored for domestic use—the source of supply for most of the inhabitants. That this was no mere theory was shown from the fact that the quarter of the island where the epidemic was most severe, to which, indeed, it was virtually confined, coincided with the direction of the wind prevailing at the time.

With such facts to guide us, therefore, there can be very little doubt that the cases of typhoid fever which have recently occurred in New York, especially in Manhattan and the Bronx, have been due, first, to the unclean condition of the streets, and, secondly, to the many excavations which are visible on all sides in the city, whether for the building of the rapid transit tunnel and new sewers, the erection of huge skyscrapers, or the laying of conduits, new mains and gas pipes. For these more or less sporadic cases the Croton water has been blamed. This charge, however, cannot rightly lie against that supply, or, if any cases can be traced to it, we shall find on examination that the water so furnished may not be drawn direct from the mains but from some roof-tank, which was either unclean through neglect, or into which, however tightly it may have seemed to have been closed, some pathogenic germs had been carried by dust particles from the streets. One of these days, possibly, these roof-tanks (in themselves often a source of danger to the fire department when a roof fire takes place) will be done away with. Till that time comes, however, the Board of Health should insist not only upon their being properly protected from disease microbes by the nearest possible approach to dustproof covers, but also that they shall be frequently inspected, their contents emptied out, and the tanks themselves thoroughly disinfected and sterilized. The risk to health arising from the use of the water contained in them would thus be minimized.

Heating and Plumbing Notes.

Under date of April 1 E. D. Hornbrook, president of the National Association of Master Plumbers, has issued from the association headquarters in Kansas City, Mo., a new edition of the "Directory of Recognized Master Plumbers," consisting of 169 pages, showing an increase in membership. The book is accompanied by a request that State vice-presidents and secretaries of local associations examine the list and make corrections in the spelling of names and the addition of new members.

Captain Emery was more than successful with the Plumbing and Steam Supply League bowling team in their contest with the Bank Clerks' League on April 11, winning two out of three games and putting up the highest score yet made in any game, the total being 952 pins, to which Ex-Secretary Wilson contributed 211 and Secretary McCormick 213. The team took part in another contest last night, and it is hoped that they made an equally good showing.

Foskett & Bishop, New Haven, Conn., have the contract for plumbing the new factory of the Fair Haven Food Company.

The following officers were elected at the recent annual convention of the Master Plumbers' Association of New Zealand: President, J. R. Christie; vice-president, J. Scott; treasurer, H. A. Ross; secretary, H. B. Renfree, all of Dunedin. Vice-presidents were also elected for the different provinces: T. Ballinger, for Wellington; J. Colville. for Canterbury; R. G. Spiers, for Southland; W. Heinz, for Westland, and A. Burt, Jr., for Otago.

Charles H. Mays, president of the Maddock Pottery Company, Trenton, N. J., has been elected president of the recently incorporated Trenton Heat & Power Company.

James Donovan, Middletown, Conn., bid $2597 and secured the contract for plumbing the dining hall building of the Connecticut Hospital for the Insane.

The Gas Appliance Company of Baltimore, Md., recently incorporated, will continue the business formerly conducted by the Gas Appliance Exchange, at 14 North Charles street, that city.

Libby & Blinn of Hartford, Conn., are placing a No. 2 Mercer Hot Water Boiler of eight sections for heating 12 hothouses for the Connecticut Tobacco Company, at Granby, Conn. They have recently completed the installation of a hot water heating system in six tobacco hothouses at Fequonnock, and hot water heating systems in the sweat rooms of C. S. Griswold & Co. of West Hartford, and in the tobacco starting house of M. Farnham, at Windsor.

The N. O. Nelson Mfg. Company, St. Louis, Mo., are now at work completing a new catalogue of their extensive line of plumbing goods, which will soon be ready for distribution.

A. G. Ivers. for a number of years with the New York house of Peck Brothers & Co., has engaged with Cornell & Underhill, New York, and will have charge of the plumbing department of their business.

The Speakman Supply & Pipe Company of Wilmington, Del., are distributing Catalogue B, which is devoted to fine thread Brass Pipe Fittings.

Malbin & Kammerman, 922 Third avenue, New York, are arranging to devote their energy entirely to the manufacture of an extensive line of Plumbing Supplies and have discontinued their branch at 193 Broome street.

E. G. Bates, Springfield, Mass., has the contract for plumbing a new hotel in Lee.

In Edinburgh, Scotland, recently, the court dismissed a claim against a plumber for £100 damages sought by a woman for injuries sustained by her child, through her pinafore catching fire at the plumbers' fire used by the defendant's workman.

A fire visited the plumbing establishment of John Burns, 1414 Franklin street, Brooklyn, N. Y., on April 10, causing damage amounting to $700.

John Sicard, a master plumber of Maisoneuve, dropped dead in the City Hall at Montreal, Canada, on April 8.

The new Tube mill of the Wheeling Steel & Iron Company, Wheeling, W. Va., is expected to be ready to make Pipe by June.

The Mayor of Reading, Pa., has appointed John E. Deiner plumbing inspector of that city.

O. H. Stinson, senior member of the plumbing firm of Stinson & Kennedy, 218 Wood street, Pittsburgh, Pa., died on April 6 from injuries sustained in collision with a trolley car. He was 43 years of age. Mr. Stinson was a vestryman of Grace Church and a member of the Royal Arcanum. He is survived by a wife and two daughters.

A new warehouse is soon to be built by the Crane Company of Chicago, at Sioux City, Iowa, at the rear of their building, at 816 Fourth street. It will be one story in hight and about 150 feet in length and will be used chiefly for the storage of Pipe and similar heavy stock.

Frank G. Du Bois, in addition to being a Fellow of the American Association of Public Accountants and holding a certificate from the University of the State of New York as a certified public accountant, has also been an active worker in military affairs. He has served for several years in the Seventh Regiment of the National Guard at New York City, acting as sergeant in the hospital corps. Mr. Du Bois has his headquarters at 100 Broadway, New York, and is prepared to give service to his many friends in the heating and plumbing supply trade, with which he has a personal knowledge from his former connection with it.

The School Board of Colorado Springs, Col., has awarded the contract for plumbing and heating the Sheldon School to H. W. Davis & Co., at their bid of $3795, and that for plumbing the Midland School to J. M. Dillon at $1200. The heating of the Midland School was awarded to St. John & Barnes at their bid of $4690.

The stockholders of the Burley Heater Company, Tyrone, Pa., on Monday, April 8, elected the following Board of Directors: G. Harvey Burley, Allen S. Garman, A. J. Hahn, Joshua Burley, Charles R. Reese, Robert A. Wilson and Diller Buck.

The *Plumber and Decorator* of London quotes figures from the census of 1901 which show that there are 10,766 plumbers, plumbers' helpers and apprentices in the city of London. Among this number are six plumbers who claim the United States as their native country. An increase of 1444 plumbers is shown since the previous census in 1891.

Louisiana & Arkansas Railroad, through their purchasing agent, J. A. Buchanan, Stamps, Ark., desire copies of catalogues and price-lists relating to Plumbing Goods.

The Barnes Mfg. Company, Mansfield, Ohio, have prepared a paper covered pocket edition of Pump Catalogue C, which is an exact duplicate of their large Catalogue C, and which is issued for the convenience of their Pump customers who may desire to carry such a catalogue in the pocket. It will be cheerfully sent to any dealer on application.

Jay H. Newbury, Goshen, N. Y., manufacturer of Iron Pipe Fittings, Gray Iron Castings, &c., is building an addition to his foundry, 26 x 120 feet.

The Robert Campbell Heating Company have moved to their new quarters, at 106 and 108 Beekman street, New York, where they have full possession of a four-story building. They will make a specialty of the Hot Air Furnaces made by the Utica Heater Company of Utica, N. Y., and will show their line of Steam and Hot Water Boilers.

Mayor Edward E. Willard of Chelsea, Mass., will receive bids until April 24 for heating and ventilating the new High School Building, and bids will be received for the plumbing until April 21.

The president of the Superior Board of Health of San Juan, Porto Rico, has issued a circular stating that after July 1 Soil Pipe known in the trade as "standard" will not be permitted in plumbing work, the board having decided to adopt a thicker and heavier Pipe after that date.. The board also prohibits the use of Iron Flush Tanks and provides that Wooden Tanks lined with copper shall be used instead.

The Decatur Plumbing & Heating Company, Decatur, Ill., bid $4965 and secured the contract for plumbing and gas fitting the James Millikin University Building in that city.

The strike in the plumbing trade at St. Paul, Minn., has been adjusted, an advance in wages of 50 cents having been agreed upon to offset the higher cost of living.

The Board of Education of Hamilton, Ohio, will receive bids until May 9 for the plumbing and installation of a flush closet system in the new school building in the first ward.

James M. Kline, Beavertown, Snyder County, Pa., is sending to the trade a four-page circular devoted to the Kline Hydraulic Ram. This Ram is made in five sizes, having delivery pipes from ⅜ to 1¼ inches in diameter. The valves are said to be capable of easy regulation, and the Rams have the capacity to raise water 25 feet for every foot of fall in the drive pipe.

F. C. Prior of Monterey, Mexico, who makes a specialty of plumbing work and the erection of Wind Mills, Pumps, &c., is reported to be at present figuring on three big contracts in that city.

The authorities of the city of Philadelphia have decided to enforce the law against the plumbers who make a practice of connecting water service with buildings from the street mains without taking out a permit, the city having lost considerable revenue through plumbers failing to make a record of their work. The penalty is $50.

The movement for a consolidation of the principal potteries of Trenton, N. J., and East Liverpool, Ohio, which has been under way for some little time past, is reported to have fallen through because of the withdrawal of some important Trenton interests. The failure of the scheme is said to have caused considerable disappointment to some of the pottery owners, as it had been thought certain to go through.

The Buckingham-Routh Company, New Haven, Conn., have contracts for furnishing many new residences with heating apparatus. The Ideal Boilers and American Radiators are to be installed in most of these instances.

Coates & Son, Findlay, Ohio, bid $6000 and were awarded the contract for heating and plumbing the new Adams Building in that city.

Owing to the strike among the plumbers at Springfield, Ohio, the master plumbers have decided to keep their shops open in the future to any journeymen capable of doing work.

Bids will be received until April 23 by the Board of Awards of the city of Baltimore, Md., for heating and ventilating a new school building at Chestnut and Fourth streets.

The committee of New York jobbers and manufacturers of Plumbers' Supplies who were appointed to oppose the passage through the State Legislature of the Wilson bill have reported that the bill passed the Assembly with the obnoxious amendment, and that it was sent to the Senate and there died. It was learned that the Smith bill was never reported out of the committee, and died by the adjournment of the Legislature. Senator Brackett also introduced a bill on the same subject, which was amended in the Senate, and referred back to the committee, where it will peacefully rest. Thus the present Lien law relating to conditional sales remains in force the same as heretofore.

New Firms and Changes.

The Keystone Valve & Mfg. Company have been organized at Pittsburgh with a capital of $10,000. The concern will make a specialty of the manufacture of a new steam valve patented by Harry Keyes of Homestead, Pa.

W. P. Benstein and Fred. Johnson, who have been for a number of years with the Sullivan Plumbing Company, have opened a plumbing and heating business on Washington street, between Fourth and Fifth avenues, Bay City, Mich.

David A. Westbury succeeds to the plumbing and heating business of H. P. Blair & Co., on North Main street, South Bend, Ind., through the withdrawal of H. P. Blair from the firm.

The Deady Brass Company have been incorporated at Houston, Texas, with a capital of $10,000, by J. S. Deady, H. W. Cortes and J. C. Bering.

James C. Farrell has opened a plumbing establishment in the Reynolds Building, at White Plains, N. Y.

Luke M. Harrington has purchased the plumbing business of the late Michael Dore, at Waterford, N. Y.

The recently incorporated Sharp Mfg. Company, Albert Lea, Minn., have taken over the plant of J G. Sharp, which they will enlarge by the erection of a new foundry, 24 x 50 feet. The company will manufacture Wind Mills, Tanks, Oilers, Gasoline Engines and will do general foundry work.

The Rockford Heating & Fuel Saving Company have been incorporated by Frank Olander, Charles Olander and A. W. Banks, at Rockford, Ill., with a capital stock of $2500, for the purpose of manufacturing Heating and Illuminating Devices.

The Salem Brass & Iron Mfg. Company, with principal office at Salem, N. J., have been incorporated with a capital stock of $100,000 to manufacture Brass, Iron, Steel, &c. Harry G. Hart, Edward Stratton and J. W. Van Meter are the incorporators.

It is reported that a syndicate is arranging to pipe natural gas from Clarksburg, W. Va., to the Pittsburgh district, through a 12-inch main.

The St. Louis World's Fair.

From all accounts, the preparations for the Louisiana Purchase Exposition are making excellent progress. The extensive grounds to be occupied by the exposition are being laid out and work on the various buildings has already begun, and in some cases carried well forward. The management of the exposition is exerting every effort to make the enterprise one of the largest and most attractive expositions yet held. The outlook for a large and representative showing of American products and manufactures is said to be very favorable. The rules and regulations have been published, and are now being distributed by the management, together with a book containing the official classification of exhibit departments. An abstract of this classification covering the various departments and groups and classes of exhibits, which will be more particularly interesting to our readers was presented in *The Metal Worker* of March 1.

The regulations provide for a very liberal amount of space for exhibits in the various buildings, and the management is urging upon American manufacturers the desirability of making early application for accommodation. Applications for space for exhibits in the line of machinery and mechanical appliances intended for exhibition in operation must be filed before October 1 for machinery and mechanical appliances not intended to be shown in operation by November 1, and for other natural or manufactured products by December 1, 1902. No charge will be made for space allotted to exhibits. Exhibitors of manufactured articles must be the manufacturers or producers of the same. All applications for space must be in writing, and addressed to the president of the Louisiana Purchase Exposition Company, St. Louis, Mo., and should be presented on forms, which will be furnished by the exposition company on application.

Freight and express charges, and all other expenses appertaining to the transportation of exhibits, must be prepaid at the point of shipment, and the goods delivered at the exposition clear of all charges. No exhibits will be allowed to be removed until the close of the exposition. All showcases, cabinets, shelving, counters, &c., required in the installation of exhibits must be provided at the expense of the exhibitor, and all pulleys, belts, belting, countershafting, &c., as well as all water, sewerage and compressed air connections must be paid for by the person applying for the same. Exhibitors desiring to contract for service of electricity, steam or compressed air, power from shafting, gas or water, must make application for the same to the chief of the department in which their exhibits are installed.

An official catalogue of all exhibits will be published in English by the exposition company. The system of awards will be competitive. The merit of exhibits, as determined by the jury of awards, will be manifested by the issue of diplomas, which will be divided into four classes: A grand prize, a gold medal, a silver medal and a bronze medal. Special rules and regulations governing the system of making awards will be promulgated hereafter.

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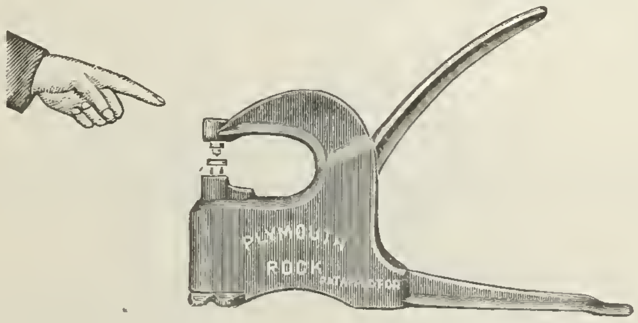
We are indebted to George H. Barbour of the Michigan Stove Company for a copy of the report of the Pan-American Exposition Commission for the State of Michigan, of which commission Mr. Barbour was the president. The report which is bound in red leather covers and gotten up in excellent style, presents portraits of the officers and members of the commission, and gives a complete account of the Michigan exhibits at the Pan-American Exposition, together with an excellent halftone engraving of the Michigan State Building and views of a number of the exhibits from that State.

Joseph Richards, inventor of Richards' Aluminum Solder, and a well known authority on aluminum, died on March 22 at his residence in Philadelphia, aged 62 years. Mr. Richards was born in England, and came to the United States 30 years ago as superintendent of the Delaware Metal Refinery of Philadelphia, which position he held up to the time of his death. For his aluminum solder he was awarded the John Scott medal of the Franklin Institute, and was also the recipient of a second medal from the institute for his testing machine for determining the grade of lead and tin solders. He also introduced a number of aluminum zinc alloys, which have been adopted for commercial use. His son, Dr. Joseph W. Richards, author of a work on aluminum, is assistant professor of metallurgy at Lehigh University.

◆

Plymouth Rock Hand Riveting Machine.

The Root Brothers Company, Plymouth, Ohio, have recently brought out an improved hand riveting machine, known as their Plymouth Rock, for setting tubular and slotted rivets. It is illustrated herewith. The advantage claimed for this riveting machine is that it automatically adapts itself to all lengths of tubular and slotted rivets, thus saving time and all lost motion. This result is brought about by means of an automatic telescoping device, in which the rivet is placed and held until ready to be used. In order to rivet it is only necessary to insert the object to be riveted between the telescoping device and the die or anvil and press down the lever. The die or anvil which upsets the rivet is case hardened, and every part, it is stated, is made for durability. The riveter is finished in baked japan and bronzed.



Plymouth Rock Hand Riveting Machine.

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Lighting Churches.

While a great many methods of lighting a church or other large auditorium are now in vogue, some of them very good attempts at successful lighting, a system that never seems to fail, and which has scored over 20,000 successful installations in churches alone in all parts of the world, is that of the famous Frink reflector, familiarly known as "The Great Church Light," a title gained by nearly half a century of work in this line. Among more recent installations made by the manufacturer, I. P. Frink, 551 Pearl street, New York, might be mentioned Grace Evangelical Church, at Scranton, Pa.; Zion Lutheran, at Loudonville, Ohio; St. Luke's Lutheran, at York, Pa.; Baptist, at Picture Rocks, Pa.; Belmont Avenue Baptist, at Springfield, Mass.; Bruns Avenue Methodist Episcopal, at Detroit, Mich.; First Christian and German Presbyterian, at Shelbyville, Ind.; Dayspring Presbyterian, at Yonkers, N. Y.; Plymouth Congregational, at Des Moines, Ia., and Grove Avenue Methodist Episcopal, at Johnstown, Pa. The lighting of a church auditorium successfully is a by no means simple problem, and mistakes occur where least expected. A consultation with this firm beforehand insures a successfully lighted church at a minimum expense, and they will be glad to forward literature, catalogues and all necessary information on receipt of required data as to size, &c.

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Secretary A. C. Faust of the Stuart & Peterson Company of Burlington, N. J., who is also secretary of the Burlington branch of the New Jersey Anti-Convict Labor Association, has written a strong letter to Senator Fairbanks of Indiana, commenting upon his speech in support of the Chinese Exclusion bill, in which Mr. Faust compares the arguments brought forward for the exclusion of Chinese in the interests of American labor with what he regards as still more cogent reasons for the abolition of convict labor in the production of goods for the American market.

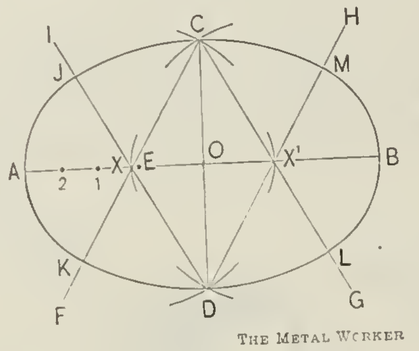
Pattern for Oval Pudding Pan.

Without Allowance for Laps.

In making oval pudding pans of IX or IC tin, care must be taken to obtain a true pattern, so that when the pattern is formed up to the required shape it will be true to its profile and have a level line on top and bottom. However, before a pattern can be obtained we must first know how to construct the elliptical figure, so that a set of centers can be obtained with which to strike the arcs desired.

THE CONSTRUCTION OF AN ELLIPSE.

In Fig. 1 is shown the method of drawing an approximate ellipse to given dimensions. Let A B represent the length of the pudding pan, and C D its width. Take the distance of C D and place it from B on B A, as shown by the dot E. Now divide the distance E to A into three equal parts, as shown by 1 and 2. Take two of these parts as radius, or E 2, and with O as center describe arcs intersecting the line B A at X and X¹. Then with X X¹ as radius and using X and X¹ as centers describe arcs intersecting each other at C and D. Draw lines from C to X and C to X′, extending them toward F and G, respectively. In similar manner, from D draw lines to X and X′, extending them toward I and H, respectively. Now with X and X¹ as centers and X A or X¹ B as radii describe arcs intersecting the lines I D, F C and G C, H D at J, K and L, M, respectively. In similar manner, with D and C as centers and D C and C D as radii describe arcs which must meet the previous arcs at J M and L K, respectively, forming an approximate ellipse.



Pattern for Oval Pudding Pan.—Fig. 1.—Method of Drawing an Approximate Ellipse.

PATTERN FOR PAN.

In Fig. 2 let A B C D represent the side elevation of the pan, whose vertical hight is equal to R C. In precisely the same manner as described in Fig. 1 draw the plan, as shown, in correct relation to the elevation, letting E F G H be the plan of the top of the pan, and J K L I the plan of the bottom, struck from the centers O, M, P and N.

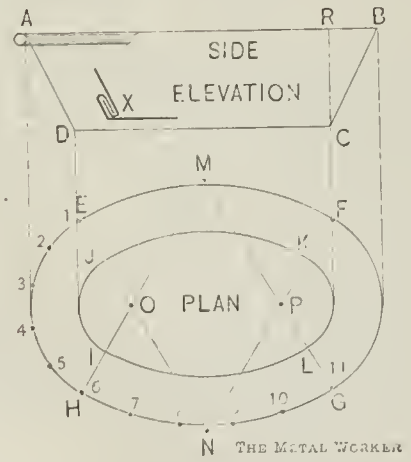


Fig. 2.—Plan and Elevation of Pudding Pan.

To obtain the radii with which to strike the pattern proceed as follows: Draw any horizontal line, R E in Fig. 3, equal to N E in plan in Fig. 2. Now take the vertical hight R C in elevation and place it, as shown by R C in Fig. 3, on a line drawn at right angles to E R. Parallel to R E and from the point C draw the line C J, equal to N J in plan in Fig. 2. Now draw a line from E to J in Fig. 3, extending it until it meets the line R O at O. Then will O J and O E be the radii with which to strike the pattern for that part of the pan shown in plan in Fig. 2 by E F K J and G H I L.

Now take the distance from P to F in plan, and place it, as shown from R to F in Fig. 3, on the line R E. In similar manner take the distance from P to K in plan in Fig. 2 and place it in Fig. 3 on the line C J, as shown from C to K. Draw a line from F to K, extending it until it meets the center line R O at P. Then will P K and P F be the radii with which to strike the pattern for that part of the plan shown in plan in Fig. 2 by K F G L and I H E J.

Next divide the curve from E H in plan into equal spaces, as shown by the small figures 1 to 6; also divide the curve H to G in equal spaces, as shown from 6 to 11. For the pattern proceed as follows: In Fig. 4 draw any vertical line, as E O, and with radii equal to O J and O E in Fig. 3, and using O in Fig. 4 as center, describe the arcs J K and E F, as shown. Now set the dividers equal to the spaces in H G in plan in Fig. 2, and starting from E in Fig. 4, step off the required number of spaces, as shown from 11 to 6.

From 6 draw a line to O intersecting the curve J K at K. Now with P F in Fig. 3 as radius and F in Fig. 4 as center describe an arc intersecting the line F O at P. Then using P as center and with radii equal to P K and P F describe the arcs K L and F G, respectively, as shown. On the arc F G, starting from F or point 6, lay off the stretchout of H E in plan in Fig. 2, as shown by points 6 to 1 on the curve F G in Fig. 4. From 1 draw a line to P intersecting the arc K L at L. Then will E F G L K J be the half pattern. If the pan is to be made in one piece duplicate this half pattern opposite the line E J.

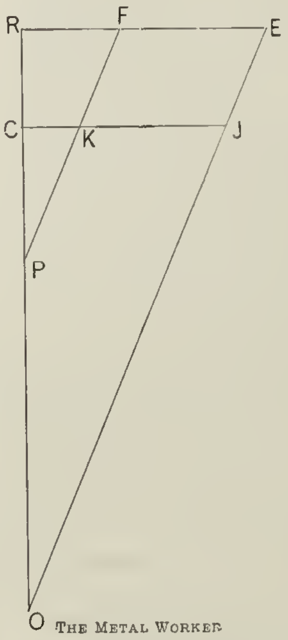


Fig. 3.—Obtaining Diagram of Triangles.

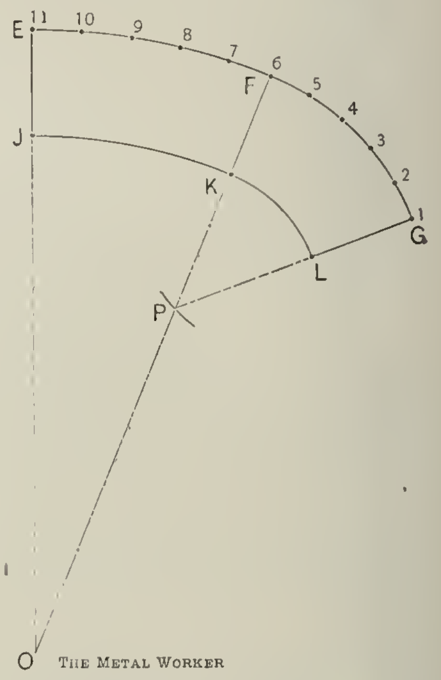


Fig. 4.—One-half Pattern Shape.

Should the pan be desired in four sections then two pieces of the patterns E F K J and F K L G would be required. Allowance should be made for seaming and wiring. The bottom of the pan is shown by J K L I in plan in Fig. 2, which is double seamed to the body similar to X in the elevation.

The Monarch Iron & Steel Company, recently incorporated under the laws of the State of Delaware with a capital stock of $100,000, will build a plant adjoining that of the Parkersburg Iron & Steel Company, at Parkersburg, W. Va., for the production of Planished Iron Sheets, under the patents of G. C. Broomall of Parkersburg. The plant is expected to be in partial operation by May 1. The officers of the company are: S. N. Nease, president; E. M. Whitto, secretary; G. C. Broomall, treasurer, and J. R. Rose, general manager.

NEW COAL TAR PRODUCTS ASSOCIATION.

The constant consolidation of manufacturing and distributing interests is again supplemented by the addition of another important industry to the already long list of such concentrations. We refer to the recent combination of the manufacturers of coal tar products under the name of the Coal Tar Products Association of the United States of America. This organization includes nearly all the manufacturers of this line of goods in the United States, and Jenkins & Hardy, 100 William street, New York, are the official representatives of the manufacturers, who have joined forces to regulate and advance the prices of this line of goods. These advances represent an average increase of approximately 20 per cent. on tarred felts and roofing materials of this character.

The prices which have been decided upon vary from a minimum figure ruling in metropolitan territory—that is, the City of New York and territory immediately adjacent thereto—to higher figures for the goods delivered in the Southern States, as follows:

	Metropolitan territory. Carloads.	Southern territory. Carloads.
Tarred Felt, per ton	$29,00	$35.00
" " 2-ply light, per roll.	.50	.65
" " 3-ply light, per roll.	.77	.85
" " 2-ply heavy, per roll	.60	.75
" " 3-ply heavy, per roll	.87	.95
Slaters' Felt, per ton	34.00	40.00

The following prices are for less than carloads or mixed carloads, and on goods the association are not competent to make absolute prices on, as they do not control the product—viz.:

	Metropolitan territory. Per ton.	Southern territory. Per ton.
Rosin Sized Sheathings	$30.00	$38.00
Deadening Felt	35.00	45.00

The prices as given above do not include one extreme Southern point, Tampa, Fla., which are fixed on a basis of $38 per ton on tarred felt as against $35 as above, the other items being advanced in proportion.

Boston prices average about 5 per cent. higher than New York prices, except on deadening felt, which is $3 per ton less than New York prices.

The territory embraced by the range of prices given covers what is known as the New England, Middle and Southern Atlantic States, which strip has been comprehensively divided into 18 divisions in great detail. The cities of Boston, Providence, New York and Philadelphia, which are in a sense manufacturing points, take minimum prices, while the territory most distant from these points take higher delivered prices, the difference being mainly the cost of the freight. The prices for less than carloads average from 10 to 20 per cent. higher than carload prices quoted above, depending on the cost of delivery.

The weights of 2 and 3 ply and slaters' felt have been increased about 5 pounds per roll over the old weights for low priced goods.

No prices are made on straight carloads of tar, rosin sized sheathings and carpet linings.

Another provision is that no contracts shall be made and all prices are subject to change without notice.

A concession of 5 per cent. will be made to purchasers of either 150 tons of pitch or 100 tons of felt within a stipulated time.

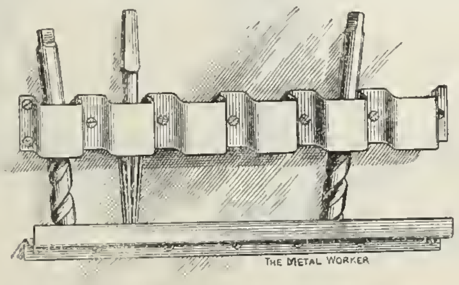
This association is simply an agreement, among the manufacturers of this class of merchandise, to control and regulate prices, and is not a consolidation of various units into one company.

The Amalgamated Association Convention.

The Amalgamated Association of Iron, Steel and Tin Workers met for their twenty-seventh annual convention on Tuesday, April 15, in Wheeling, W. Va., with some 250 delegates. The principal subject for consideration at this convention will be the wage scale. Notwithstanding the existence of considerable opposition to President Shaffer and some of the present officials of the association, it is believed that the arrangement entered into by them with the American Tin Plate Company, the American Sheet Steel Company and the Republic Iron & Steel Company, in regard to the continuance of the present scale, will be indorsed by the convention. It is understood that a strong effort will be made to prevent the re-election to the presidency of Theodore J. Shaffer. The only name that has been given out so far as favored for the presidency in opposition to him is that of Assistant Secretary Michael F. Tighe of Wheeling. The meetings of the association are held behind closed doors, and but little reliable information in regard to the proceedings is likely to be available until the close of the meeting.

A Tool Rack.

A very simple tool rack is shown in the accompanying illustration. While in use in a large number of shops, there are many other shops which might adopt this rack to their advantage, for it is much better to have a place in which every tool belongs than to have no particular place for any tool. This rack consists of a strip of tin, bent, as shown, to receive the different tools. To prevent the tool from slipping out a little shelf, also made of tin, is nailed under the rack at the proper distance, as illustrated. The rack, as shown, is in use in the store of O. D. Sykes, Seymour, Conn., who has been a constant subscriber to *The Metal Worker* for many years.



Tool Rack.

A Southwestern Supply House.

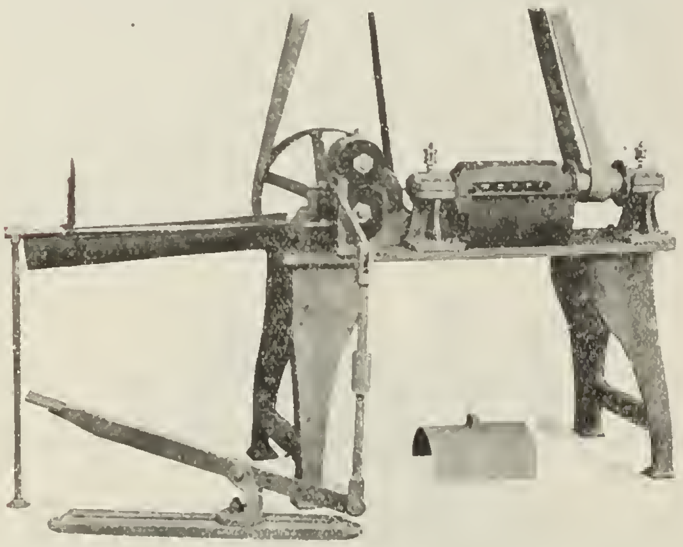
The Peden Iron & Steel Company, Houston, Texas, are sending to the trade a handsomely bound catalogue of 414 pages, showing the great variety of goods which they carry in stock and are prepared to ship promptly. A useful feature of the work is an index occupying 12 pages. The catalogue is divided into four departments, the first including sheet iron, sheet zinc and sheet copper, metal roofing and siding, steel ceiling, tank steel, solder, tin plate, tinners' tools and supplies, including cornice brakes, squaring shears, tinners' trimmings, finials, crestings, ventilators, roofing tiles, conductors, eave trough, strainers and rain water cut offs. Another section is occupied by a varied line of heating and cooking stoves, kitchen hollow ware, stove pipe, elbows, chimney caps, dampers, stove polish and stove boards.

Department B is devoted to mechanics' tools, including ratchet and post drills, brushes of all kinds, emery wheels, twist drills, saw sets, punches, plyers, hammers, axes and an extensive variety of wood working tools, rules, tape measurers, die stocks for threading bolts, and iron pipe, together with pipe wrenches, pipe tongs and pipe cutters, vises and pipe cutting and threading machinery. In Department C are presented cast and wrought iron pipe and fittings, lead pipe and lead lined pipe, the cast iron fittings being made for both steam and water and for drainage systems. These are followed by a complete line of brass valves and iron body brass mounted valves for steam apparatus and for drive wells. Oil cups, safety valves, grease cups, injectors, lubricators, steam gauges, fusible plugs and speed indicators are also shown, followed by a complete line of pumps and pump supplies, shafting, pulleys, hangers and belting. Hose and hose supplies with nozzles and quick repair apparatus complete this department.

Department D opens with wire and wire nails for all purposes and woven wire for poultry netting and of all sizes of mesh for different uses. Wiremen's supplies, insulators, wire rope, tackle blocks and chain blocks are another group of supplies. Bar iron and rolled iron, tool steel, machine and carriage bolts, lag screws and bolts for various purposes are followed by nuts and washers and wood screws. Grindstones, heavy chain, blacksmiths' blowers and forges, horse shoes and nails are followed by hinges, barn door hangers, shovels, wheelbarrows, lanterns and a complete line of cement, roofing supplies and paints, with roofing and sheathing papers, deadening felt and asbestos.

Wire Straightener and Cutter.

Herewith is given an illustration of the patent wire straightener and former manufactured by L. H. Solosth & Sons Stamping Works, Grand Rapids, Mich. The machine is made very strong and is so arranged that the wire can be cut any length. The wire is straightened in passing through the machine and leaves the cutter perfectly straight. The dies are double acting and are made so absolutely uniform that exact duplicates can be furnished when desired at any time.



Wire Straightener and Cutter.

Of Interest to Roofers.

Follansbee Brothers' Company, Pittsburgh, Pa., with branches in Philadelphia, Chicago and Louisville, have issued a 48-page catalogue covering the line of goods which they manufacture or handle. The first place in the publication is given to the firm's special brands of roofing plates, of which they manufacture 13 varieties, and their bright charcoal tin plates. A table is given of the net weight per box of the tin plates. These are followed by galvanized sheets, black sheets, blue annealed steel sheets, planished iron, polished steel and American blue steel sheets, accompanied by tables of weights and measures, also painted or galvanized corrugated sheets, solder and a long line of roofers' supplies, including self capping, roll roofing, pressed standing seam roofing, V crimped roofing, imitation weather boarding, pressed brick siding, beaded ceiling, ridge cap, eaves trough, miters, conductor pipe, elbows and shoes, rain water cut offs, eave trough hangers, conductor strainers, conductor pipe hooks, &c. Tinners' rivets, stove pipe elbows, copper wire, galvanized hoop iron, registers and ventilators, dampers and damper clips, soldering coppers and tinners' tools and machine form another section of the catalogue, which closes with a list of sheet copper, copper bottoms, pits and flats, sheet zinc, boiler handles, roofing cement, rosin and nails. The publication contains a number of useful tables of weights, sizes, gauges, &c., as well as a table of calculations for tin roofing. An interior view of the company's tin plate factory is presented at the end of the catalogue, together with an index.

Manager Lewis Lea of the Sandusky Plumbing & Boiler Company, Sandusky, Ohio, closed a contract with Lewis P. Brown of Kelly Island, to do the hot water heating and plumbing in his new home.

FLASHINGS.

The strike of 3000 employees at the New York and Brooklyn factories of the American Can Company was declared off on Monday and the strikers returned to work the following day. The dispute was settled by the company abolishing the system of time slips, which was objected to by the workers.

F. S. Wheeler, secretary and treasurer of the American Can Company, has also been appointed auditor of the company.

W. S. Bullard, Bridgeport, Conn., is roofing a large building for Colonel Warren, one for the Bridgeport Brass Company and one for the Union Typewriter Company in Bridgeport. He has recently completed the roofing of several buildings for the Union Metallic Cartridge Company.

It is said that the American Tin Plate Company are contemplating purchasing the abandoned mill property of the Hussey Steel Company, at New Kensington, Pa., with a view to adding it to the property already owned by the company at that place. It is understood that the Pennsylvania and Pittsburgh plants of the American Tin Plate Company, at New Kensington will be enlarged in the near future by the addition of several mills.

The corrugating department of the Parkersburg Iron & Steel Company's plant, at Parkersburg, W. Va., has been put in operation.

H. J. Pratt & Co., Springfield, Mass., have the contract for a galvanized iron front in connection with the alterations being made in the Brewer Building, in that city. They are also placing metal ceilings in several buildings.

The Duluth Corrugating & Roofing Company, Duluth, Minn., have just put in metal walls and ceilings for J. L. Travers of that city, which are referred to as the most artistic interior decorations of their kind in the city.

The Huntington Tin & Planished Plate Company of Huntington, W. Va., recently incorporated with an authorized capital of $200,000, $50,000 of which is paid in, will erect immediately a two-mill plant, which they expect to increase to a ten-mill plant in the near future. The necessary buildings have been contracted for, and most of the machinery has also been ordered. The president of the concern is B. W. Foster; treasurer, W. H. H. Holswade; secretary, J. W. Valentine; manager, John A. Jenkins, and purchasing agent, D. A. Mossman.

Work is progressing rapidly on the new buildings which the Ashland Sheet Mill Company are putting up at Ashland, Ky. The main building will be 420 feet long and 100 feet wide, and will contain sheet and bar mills and the necessary furnaces, as well as an electric crane. The boiler house and electric plant are being constructed at a spot north of the main building, near the river. The equipment will consist of ten steel boilers 20 feet long and 72 inches in diameter, together with a complete electric plant of more than sufficient capacity for the initial needs of the mills. Twenty-eight arc and 200 incandescent lights will be installed at the start. Two Porter-Allen engines will furnish the power, as well as a separate bar mill engine.

St. John & Barquist are erecting a two-story brick building, 44 x 100 feet, at Des Moines, Iowa, which they will equip with machinery for the manufacture of Cornices, Steel Ceilings and Stamped Metal Work.

Roofers and tinsmiths, who have occasion to edge quantities of Tin Plate, are invited by the Danzer Metal Works, Hagerstown, Md., to carefully investigate Danzer's Lightning Edger. This machine works very accurately by foot or hand power, saving time and labor. The manufacturers claim it to be a valuable acquisition to any shop.

The Double Truss Cornice Brake Company, 1453 Niagara street, Buffalo, N. Y., manufacturers of Double Truss Cornice Brakes, Beaders, &c., have incorporated under same name, with a capital stock of $75,000, and intend either to enlarge their present plant or erect a new one in the near future. The officers are Hugh Falconer, president; F. H. Silk, secretary and treasurer, and John H. Crocker, general manager.

E. W. Bliss of the E. W. Bliss Company, Brooklyn, N. Y., has gone to Europe for a two months' pleasure tour.

S. H. Isler, Jr., who conducts a roofing, plumbing and heating business at Kinston, N. C., is desirous of receiving catalogues and price-lists from manufacturers of Steel Ceilings.

THE NORTH END UNION PLUMBING SCHOOL.

The graduating exercises of the ninth term of the North End Union Plumbing School of Boston, Mass., were held at the school on Wednesday evening, April 16, the Rev. Paul Revere Frothingham presiding. Previous to the opening of the exercises an opportunity was given to the visitors to inspect the work of the past season's plumbing class, which reflected great credit upon the school.

The chairman in opening said, among other things, that education should be broad and inclusive of everything which pertains to the welfare of life; that the trained eye and hand is as important and amounts to as much as what is called mental training. The work done in the school of plumbing was just as truly educational as that done by the students at Harvard.

Daniel Shannon, president of the Master Plumbers' Association of Boston, in following, said that his organization had always taken a lively interest in the school, its presiding officers having participated in all of the graduating exercises of the institution since it began. He emphasized the fact that the school, at best, can only lay the foundation, which, though all important, is only a preliminary to the greater demands of the trade. Success in the plumbing trade, as in any other, depends upon the individual. Mr. Shannon said he made this statement out of his own experience, from the time when he entered the trade at $6 per week until he received $47 per week. In closing, he urged the boys to make good use of their spare time in study and in the acquisition of general information. Character, he remarked, lay at the foundation of all true success.

Robert D. Andrews of the firm of Andrews, Jaques & Rantoul, the well-known Boston architects, briefly traced the rise of education from the monasteries and the first universities down through the centuries, showing how the scholars went back to the literature of the Greeks and Romans. The study of these languages was regarded as desirable, and it was eventually made to appear essential to any education worthy of the name. This fetish is still worshiped in educational circles. Before manual training could get a foothold in the educational field it had to assert that there was no intention of teaching anything that would be of use to anybody, but that it was to be used only as any other disciplinary study. He characterized the present system of education as foolish, in so far as it does not provide that training which helps a man on the side of the material requirements of life. He sketched in brief outline the ideal school of the future, wherein the workshop would be co-ordinated with the academic work, and a training would thus be given which would not make a boy feel that he was forced into a new, unknown world on leaving school.

Albert A. Winship, editor of the *Massachusetts Journal of Education*, who was the next speaker, began his remarks by saying that traditions die hard, and that we have been wedded to the old ideas so long that it is hard to give them up. "A friend of mine," said he, "while in Scotland last summer visited one of the manual training schools. He saw a boy making a kite, and asked the boy if the kite would fly after it was made? The boy said, 'No, it will not.' 'Why do you make the kite if it will not fly?' 'Oh, this is a type kite!' 'But why do you not make one that will fly?' 'That would not be educational,' replied the boy. 'Can you make one that will fly?' 'Oh, yes sir; but we are not allowed!'" That in his opinion illustrated the attitude of mind toward our present educational system. We are coming, however, to recognize that the best education is worked out through that which is useful.

Before awarding the diplomas to the graduating pupils, David Craig, in alluding to the facetious remark of the presiding officer, that "all plumbers get rich," and to the observation of one of the other speakers, that it was "a sin for any man to die rich," said that Mr. Shannon himself had decided not to commit this sin. He told the boys that there never was a time in the history of the world when larger knowledge and better education were required for success in any one of the trades than at the present time, and he urged the pupils to employ every spare minute in acquiring that knowledge which was essential to success, closing his remarks with much excellent advice. Diplomas were then awared to the following eight graduates of the School of Plumbing:

Henry M. Cook, Brookline, Mass.
William A. Laraway, Cambridge, Mass.
K. W. McManus, Boston, Mass.
Joseph W. McNally, Andover, Mass.
Hans R. Neilsen, Boston, Mass.
Chris. Sorensen, Boston, Mass.
Eugene O'Neil, Boston, Mass.
Carl G. Pihlkrantz, Boston, Mass.

The North End Union School of Plumbing opened its first class in January, 1894, and, consequently, is now in its ninth year. The class during the past season has been full, and a number of applicants had to be turned away for lack of room. Superintendent Samuel F. Hubbard advises us that there has been a marked earnestness of purpose among the pupils, which is to be expected from young men who pay their own way. The tuition, in some cases, is but a small part of the expense, as there are several pupils who have to travel a round trip of 50 miles, and one more than 60 miles, to attend the class.

In the past season David Craig, one of Boston's leading master plumbers, gave lectures to the class on the technical science of plumbing. These lectures were delivered in a particularly clear and intelligent manner. Mr. Craig talked with a piece of chalk in his hand to illustrate by blackboard drawing the difficult points of his subject. William H. Haskell has had charge of the shop work as instructor, as he has in each previous season. Mr. Haskell's work is thorough and conscientious, based on the highest standards, and he never allows himself to say of a piece of work below this standard that "it will do."

The tenth term of the North End Union Plumbing School will open on Wednesday evening, October 1, 1902. Terms for the course are $10, payable in advance. No one under 17 years of age is admitted, and preference is given to those already engaged in the plumbing trade. Each applicant is required to declare his intention to remain in the school until he has finished the course. All tools and material are provided without cost. Those desiring to enter the school in the fall should send in their names at once. Blanks may be had by addressing Samuel F. Hubbard, superintendent North End Union Plumbing School, 20 Parmenter street, Boston, Mass.

A Reference Book on Transmission.

Reeves Pulley Company, Columbus, Ind., issue a small leather bound gilt edged pocket reference and memorandum book, size, 3 x 6 inches, covering much valuable information relating to variable speed transmission, illustrated with sectional and perspective drawings. The subjects covered are the use of variable feed transmitters on different mechanisms, relative working parts of the Reeves transmitter, rules for calculating size and speed of pulleys, &c.; tables of horse-power transmission, tables of speed varying mechanisms, special information for paper mill trade and considerable other information of value to all users of power. The demand for the little book has been so great as to cause the publishers to set the nominal price of 15 cents per copy, for which it will be sent postpaid to any address.

Addresses of manufacturers of and dealers in fuel oil burners are wanted by Marvine Gorham, care of Michigan Bolt & Nut Works, Detroit, Mich.

THE LETTER BOX.

Inquiries in regard to practical questions of general interest are invited, in reply to which we shall be glad to receive suggestions and information from our readers.

Correspondents are requested in all cases to give their names and addresses, which will not, however, be published or disclosed without their consent.

IMPROVEMENTS IN BOILER CONNECTIONS.

From S. L. R., Newark, N. J.—I thank you for the ideas in reference to hot water boiler connections presented in *The Metal Worker* of March 29, and hope that some of the readers of *The Metal Worker* will also express their opinions on this subject, for I still think that it is best to connect the pipes from the water back to the side of the boiler. Certainly when the boiler connection is in the side near the top it makes a neater job. Would not hot water flow from the water back when the faucet was open, instead of from the boiler, if the pipe were connected to the hot water service pipe at the top? If it was connected at the side would not the hot water flow from the boiler and give a better circulation between the boiler and the water back? Would it not also throw a more positive flow of hot water when a faucet was open, since there would be more hot water to draw from? Furthermore, it would not interfere with the circulation between the water back and the boiler while the faucet was open.

To make a still further comparison I present, in Fig. 1, the character of boiler connection which I recommend. Here a gas heater was used, or the water was heated from the fire in the range, which gives a quick heating connection and a supply of hot water to draw upon, while affording a better circulation, without any possibility of steam being trapped to interfere with circulation. In Fig. 2 is shown what I have found to be the best manner of connecting a gas water heater, so that the water heated will flow directly to the faucet, and a supply of hot water can be had without an expensive consumption of gas.

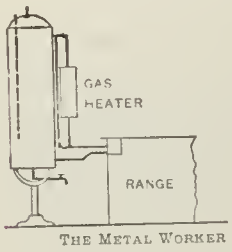


Fig. 1.—A Suggested Connection.

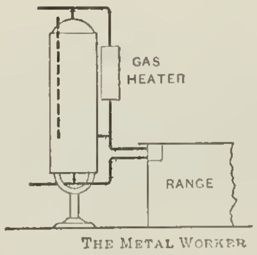


Fig. 2.—A Customary Connection.

Improvements in Boiler Connections.

Note.—Unless the fire is very low and going out, the hottest water that the apparatus is capable of furnishing will flow from the water back, the source of heat, and the water stored in the boiler will rarely be hotter. The connection shown in Fig. 2 certainly would affect the circulation when hot water was being drawn. There are advantages to be derived from the side connections and boilers would doubtless be made for them if there was sufficient demand.

WANTS A LACQUER FORMULA.

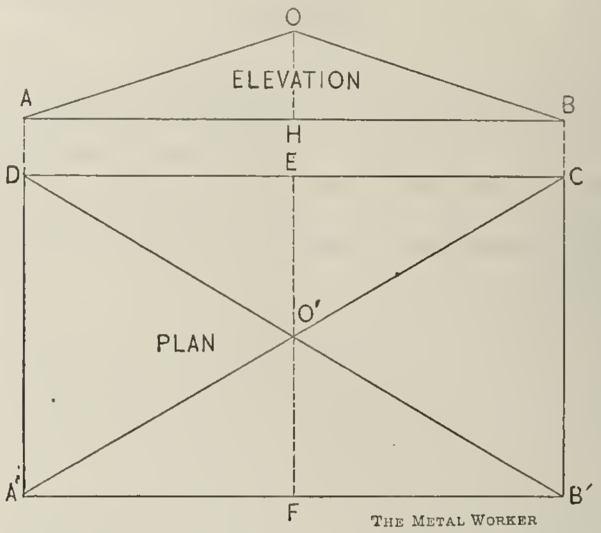
From W. C. W., North Lawrence, N. Y.—I should be glad if *The Metal Worker*, or some of its readers who have had experience, would inform me how lacquer is made and applied to stove pipe rings.

Note.—We shall be glad to present any information our readers may furnish for the benefit of this correspondent. In the meantime we would suggest that formulas for the making and application of lacquer are given in a number of receipt books, which can be furnished by our book department. Lacquers can be purchased cheaply from a number of manufacturing concerns, together with full instructions for their application either with a brush or by dipping.

PATTERN FOR SQUARE PITCHED COVER.

From E. G. Champion, Cortland, N. Y.—Will you kindly give me through the columns of *The Metal Worker* a pattern for striking out a square pitched cover?

Answer.—The making of a pattern for a square pitched cover is one of the most simple problems in pattern cutting. In practice the tinsmith generally cuts out the cover without the use of a pattern. Fig. 1 shows the plan and elevation of a square pitched cover, A B O being the elevation, and A′ B′ C D the plan. The line E O′ F divides the cover into two halves. In order to find the pattern for one of these halves it is necessary to find the true length of the lines represented in plan by E O′ and D O′. To do this draw a horizontal line, as H′ X in Fig. 2. At H′ erect a perpendicular, making O″ H′ equal to O H in the elevation in Fig. 1. From H′ on the line H′ X in Fig. 2 lay off H′ E′, making it equal to E O′ in Fig. 1. In Fig. 2 connect O″ and E′ with a straight line. Then the line O″ E′ represents the true length of line shown by E O′ in plan. In a like manner lay off H′ D′ in Fig. 2 equal to D O′ in Fig. 1, and connect the points O″ D′ with a line, O″ D′. Then this line gives the true length of the line shown in plan by D O′.



Pattern for Square Pitched Cover.—Fig. 1.—Plan and Elevation.

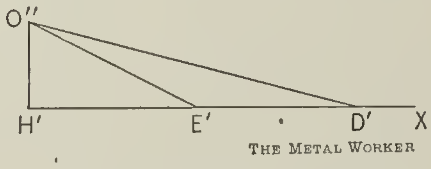


Fig. 2.—Diagram of Triangles.

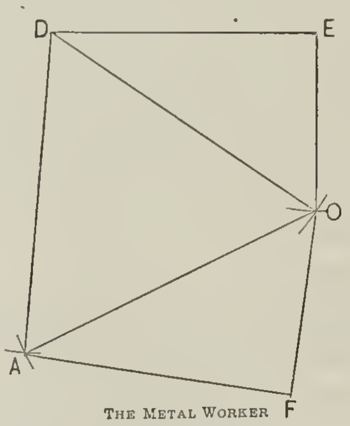


Fig. 3.—The Half Pattern Shape.

To make a pattern of a half cover draw the line D E in Fig. 3 equal to D E in Fig. 1. Then from E in Fig. 3 as a center and with a radius equal to O″ E′ in Fig. 1 strike an arc. Intersect this arc with an arc struck from

D in Fig. 3 as the center with a radius equal to O'' D' in Fig. 2. The point of intersection is shown at O. Draw the lines E O and D O. From D in Fig. 3 as the center and with a radius equal to D A' in Fig. 1 strike an arc, which interesect with an arc struck from O in Fig. 3 as the center with a radius equal to O'' D' in Fig. 2. The point of intersection is shown at A in Fig. 3. Draw the lines D A and O A. Again from O in Fig. 3 as the center and with a radius equal to O'' E' in Fig. 2 strike an arc, which intersect by an arc struck from A in Fig. 3 having a radius of A' F in Fig. 1. The point of intersection is shown at F in Fig. 3. Draw the lines O F and A F. Then E D A F will be the pattern for half the cover, the bends being made along the lines D O and A O.

THE LIFT OF A PUMP

From P. B., 497 Franklin avenue, Brooklyn, N. Y.—We would like to know from what depth water can be drawn by a pump.

Answer.—At the sea level the air pressure is about 14¾ pounds to the square inch, which is equivalent to a water column about 34 feet high. In other words, a pump piston creating a vacuum with no leakage will raise water about 34 feet. Our correspondent knows, however, that the imperfections in pump construction render it only practicable to pump water a shorter distance than this, and 25 feet is about the limit of a successful and easy operating pump. On the other hand, as we ascend the air pressure becomes less and less, as a barometer will indicate. For instance, at a distance from the sea level of ½ mile the pressure is only 13.3 pounds per square inch, and a pump, therefore, would only raise water at that hight 30.7 feet. At the hight of a mile the pressure is further reduced to 12 pounds per square inch, which would permit suction pumping from a depth of but 27.6 feet.

National Manufacturers' Association

The seventh annual convention of the National Association of Manufacturers opened at Indianapolis, Ind., on Tuesday, April 15, with a considerable attendance of delegates from all parts of the country. President Theodore C. Search of Philadelphia, in his annual report, called attention to the declining exports of American manufactured products and urged manufacturers not to neglect their foreign customers in this era of extraordinary home demand, lest in times of depression they should find their foreign trade destroyed and no outlet for the surplus of an overstocked home market. Among the subjects touched upon by Mr. Search were: Reciprocity with Cuba, the proposed new Federal Bureau of Commerce, the Nicaragua Canal, the consular service, the Eight-Hour bill and commercial education. Mr. Search announced that he would not be a candidate for re-election to the presidency, which he has filled with conspicuous ability for six years.

George H. Barbour of Detroit, Mich., chairman of the Committee on Rules and Order, made a report offering a few simple, practical rules for the guidance of delegates, which were adopted by the convention.

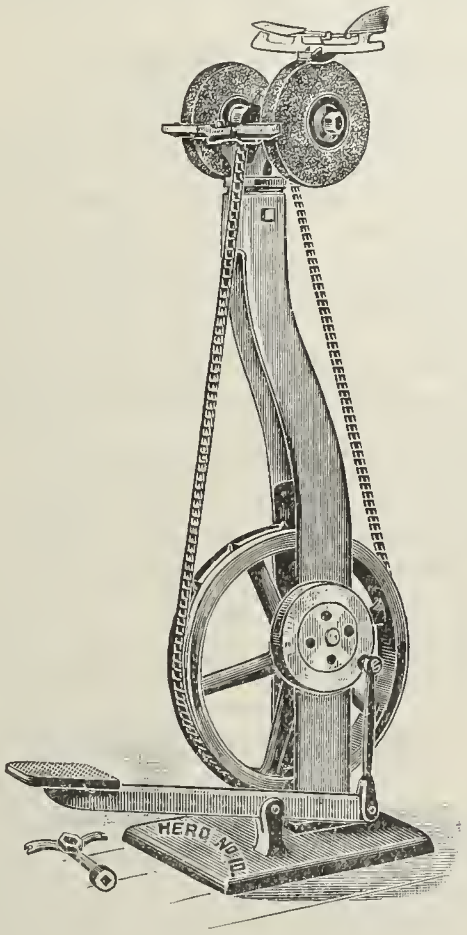
On motion of Mr. Barbour the president was instructed to telegraph to the Ways and Means Committee of the House of Representatives to ask them whether they would entertain a large committee from the National Manufacturers' Association in favor of the bill creating a department of commerce. Much interest was displayed in the bill providing for the compulsory use of the metric system, on which considerable division of opinion was developed.

Among the delegates to the convention were the following: P. A. Myers of F. E. Myers & Bro., Ashland, Ohio; Henry W. Avery of the Avery Stamping Company, Cleveland, Ohio; George H. Barbour of the Michigan Stove Company, Detroit, Mich.; James Powell of the William Powell Company, Cincinnati, Ohio; Thomas Devlin of the Thomas Devlin Company, Philadelphia; Oberlin Smith of the Ferracute Machine Company, Bridgeton, N. J.; George T. Coppins of the Walworth Mfg. Company, Boston, Mass., and James A. Coe of James Coe & Co., Newark, N. J.

On Thursday D. M. Parry of Indianapolis was elected president of the association, E. H. Sanborn of Philadelphia, secretary, and Hamilton Carhart of Detroit, treasurer. New Orleans was selected as the next convention city.

Hero Emery Grinder No. 10.

Robertson Mfg. Company, 38 Greenwood place, Buffalo, N. Y., manufacturers of patented hardware specialties, special machinery, tools, &c., have just brought out the No. 10 Hero emery grinder, here illustrated. It is referred to as a strong, practical machine with great speed and power. It has a special steel chain belt, running on toothed wheels, giving a positive drive with very little friction. The balance wheel is heavy, with a hardened steel shaft and a new anti-friction bearing. The column is curved, giving the operator a much better position in which to work than with a straight column, at the same time increasing the leverage on the treadle. The base, column and head are three distinct castings, so made that duplicate parts can be furnished if necessary. The ⅝-inch steel spindle runs in large bearings milled from the solid metal to an accurate fit and is geared 19 to 1 of the treadle. The head is adjustable in the column to take up any slack in the chain as it occurs from constant use. The hight of the machine is 40 inches and it is furnished with two emery wheels 6 x ¾ inches. With each machine is also supplied a special holder for grinding skates, knives, shears, &c., together with a wrench fitting all screws. This device is especially suited to the use of repair men, blacksmiths, plumbers and others having tools to grind.



Hero Emery Grinder No. 10.

United States Consul Worman writes from Munich, Germany, to the State Department at Washington that a Hamburg chemist is reported to have discovered a fluid which, when added to ordinary water, produces a liquid that cannot be distinguished from petroleum. It can be used for lighting as well as for heating purposes. When burned in a lamp with an ordinary wick, it gives an extraordinary white light of double the strength of a petroleum flame. The fluid is not explosive. A company, it is said, has been formed in London for the exploitation of this discovery.

TRADE REPORT.

MARKET SUMMARY.

Pig Tin is about 1c. higher, and firm but quiet.

Copper is quiet but somewhat firmer.

Pig Lead remains quiet and without change.

Spelter is firm but dull.

Antimony is unchanged.

Nickel is active at former price.

Aluminum is active and unchanged.

Tin Plates are quiet and prices firm.

Sheets continue in active demand, with heavy gauges scarce; prices are strong.

Foundry Iron is higher for spot and scarce.

Sheet Copper is in good demand and firm.

Sheet Zinc is without change.

Old Metals are not active, with prices rather weak.

Hardware is in large demand and prices are strong.

Builders' Hardware was advanced 20 per cent. in price.

Sad Irons have been advanced ¼c. per lb.

Plumbers' Supplies are in large demand, with prices firm.

Sanitary Earthen Ware prices are steadily maintained.

Wrought Iron Pipe is very stiff in price, and in good demand.

Roofing Felts have been advanced 20 per cent.

Wire Nails are firm, and in active demand.

Cut Nails are moving freely at former prices.

Window Glass was advanced 5 per cent. by jobbers.

White Lead is firm and unchanged.

Linseed Oil is quiet and firm.

Spirits Turpentine is ½c. higher and strong.

METAL MARKET.

New York, April 19, 1902.

Pig Tin.—Operations of a speculative character have continued in the London Pig Tin market. The manipulators have managed to hold the market up, as they did last week, and have sent prices still higher. Quotations at the close of the week ruled at about 1c. a lb. above those given in our last report, Straits Pig in small lots being quoted by jobbers at about 29½c. to 29¾c. per lb. The market was very inactive, however, as consumers are holding out just as long as they possibly can. Shipments from the Straits were very small during the first half of the month. The market closed strong with upward tendency, and a fair amount of business, which was confined to the supplying of current needs.

Copper.—Tuesday marked the inauguration of trading under the Standard Copper contract at the New York Metal Exchange. The trade showed an active interest in this movement and a comparatively lively business was transacted. The smaller consumers have been buying from hand to mouth, while the larger buyers are understood to have covered their wants for some time to come. It is said that the supply of Lake Ingot for immediate delivery is rather light, and this has tended to stiffen the market a trifle. Retail prices are without change. Lake Ingot in small lots being quoted at about 13¼c. to 13¾c. per lb., and Casting Copper 13c. to 13¼c. Exports have been very large, amounting to nearly 8000 tons in the first half of this month.

Sheet Copper.—A steady demand for Sheet Copper continues, with prospects of a considerable consumption of this material from now on. Prices are steady on the basis of 18c. per lb. for small lots from store.

Pig Lead.—This metal is dull and uninteresting, without any change in prices, which are very firm. Buying is on a very moderate scale. American Pig in small lots is quoted at 4.45c. to 4½c. per lb. St. Louis advices report a fair demand and inquiry in the market for Pig Lead with prices showing little change since the date of last report.

Spelter.—The Spelter market is rather confused. The shortage of Ores a week ago resulted in two of the large concerns bidding against each other, with the result of sending prices upward. This competition has now stopped and consumers have not as yet come in for their regular supplies, consequently it is a waiting game to see whether a fresh demand keeps prices up, or whether the consumers can wait to see prices recede. The market continues firm. Small lots of good Western brands rule at about 4.60c. to 4.70c. per lb. St. Louis advices report the demand for Spelter in that market to have quieted down considerably, while prices have receded somewhat.

Sheet Zinc.—The demand for Sheet Zinc is of fair proportions. Prices are unchanged at 6¾c. per lb. for 600-lb. lots and 7c. to 7¼c. for smaller quantities.

Antimony—Is unchanged. Hallett's in small parcels is quoted at 8⅝c. to 8¾c. per lb.; U. S., 8⅜c. to 8½c., and Cookson's at 10¼c. to 10¾c.

Nickel.—The situation in regard to this metal is unchanged. Small lots are quoted at 55c. per lb.

Aluminum.—Demand continues good and prices unchanged from their former level. Small lots of No. 1 Ingot, guaranteed 99 per cent. pure, are quoted at 37c. per lb., and 100-lb. lots at 35c.

Tin Plates.—The market is unchanged and without interesting developments of any kind. The mills are understood to be running to full capacity, and shipping their product as fast as made in fulfillment of old contracts. New business is said to be rather light, however, the heavy spring and early summer trade not having yet opened. A slight revival in the demand from the smaller consumers was noted this week, due to the improvement in the weather. Prices are without change. American Bessemer Coke Plates, IC, 14 x 20, are quoted at about $4.85 to $4.95 per box for small lots delivered at New York or corresponding points.

Sheets.—The Sheet trade is said to be in a very satisfactory condition, the demand keeping up in heavy volume for both Black and Galvanized Sheets. Prices, however, are on a very profitable basis, and jobbers report that better deliveries can be obtained on the lighter gauges of Black Sheets than on the heavier gauges and on Galvanized. Retail prices are firm and unchanged. Jobers quote No. 27 One Pass Cold Rolled Soft Steel Sheets at about 3.85c. to 3.90c., and Galvanized Sheets at 70 to 70 and 2½ per cent. off the list. A new departure has just been made by the American Sheet Steel Company. The company announced that from April 1 they would make their quotations on Galvanized Sheets to jobbers and large consumers at net prices instead of naming a discount off the list. For many years past Galvanized Sheets have been sold from a list which has always been far above the actual prices which have ruled on this material. The change is regarded with approval by the trade generally. The jobbers and dealers generally have not yet made a change in their methods of quoting Galvanizd Sheets to their customers, but it is likely that they all will in time follow the practice of the manufacturers in this matter. It was at one time found advantageous to have a list price for Galvanized Sheets, as the values fluctuated materially, especially when there was more competition than there has been since the American Sheet Steel Company absorbed the majority of the mills making this line of goods. But prices of late have ranged within such comparatively small limits that the convenience of having a list from which discounts could be quoted was no longer felt. The change in practice made by the American Sheet Steel Company will probably commend itself to both the wholesale and the retail trade, as well as to consumers, as tending toward greater simplicity and definiteness in quotations.

Chicago advices are as follows: The demand is excellent, an increase in orders being particularly noticeable in Black Sheets. Heavy gauges are still hard to get, the mills being from six to ten weeks behind on deliveries, and prices of Nos. 10 to 16 are strong, with an upward tendency. Galvanized Sheets are now quoted at net prices, small lots from store being held at 4.70c. to 4.75c. for No. 27, Chicago.

Old Metals.—The demand for Scrap Metals of all kinds is not active and prices are rather weak. Dealers are paying about the following rates for moderate sized lots, delivered at New York or corresponding points:

Heavy Copper	per lb. 10 c.
Light and Tinned Copper	per lb. 8¾c.
Heavy Brass	per lb. 8 c.
Light Brass	per lb. 6½c.
Lead	per lb. 3¾c.
Tea Lead	per lb. 3⅜c.
Zinc	per lb. 3 c.
Pure Aluminum Sheet	per lb. 25 c.
Cast Aluminum	per lb. 20 c.
No. 1 Pewter	per lb. 16½c.
No. 2 Pewter	per lb. 9 c.
Tin Plate Scrap, per gross ton	.... to $5.00
Wrought Iron Scrap, per gross ton	$13.00 to 13.50
Heavy Cast Scrap, per gross ton	12.00 to 12.50
Stove Plate Scrap, per gross ton	9.00 to 9.50
Burnt Iron, per gross ton	7.00 to 7.50

THE PIG IRON MARKET.

New York.—The market continues quiet, but exceedingly strong, and prices for prompt Iron are advancing. In fact, the market is stiffening for later deliveries. We quote for forward delivery, Northern Irons: No. 1, $20.50 to $21; No. 2 X, $19.25 to $19.75; No. 2 Plain, $18.75 to $19.50, at tidewater. Tennessee and Alabama brands are as follows: No. 1 Foundry, $16.75, the official quotation for early delivery, $19.50 to $20.50; No. 2 Foundry, $15.75, the official quotation for early delivery, $18.75 to $19.

Chicago.—Current orders for Pig Iron form a fair aggregate, but the business is by no means as large as that prevailing last month. The leading consumers have pretty well covered their requirements for the last half of the year, although there are still some who are taking their chances of being able to purchase at better prices a few weeks or months hence. It is difficult to quote prices at present, as a wide range prevails between schedule prices and those realized on prompt shipments, or even on such Iron as can be purchased for future delivery. The schedule of the leading Southern companies have not been changed from $12, Birmingham, for No. 2 Foundry, but contracts are being placed at $3 higher by some of the outside companies. Prices on local Iron are also normal and unchanged, but sales for early shipments are made at higher rates. Our quotations must, therefore, be considered largely nominal. We quote as follows:

Lake Superior Charcoal	$21.50 to $22.25
Local Coke Foundry, No. 1	19.00 to 19.50
Local Coke Foundry, No. 2	18.50 to 19.00
Local Coke Foundry, No. 3	18.00 to 18.50
Local Scotch, No. 1	19.00 to 19.50
Ohio Strong Softeners, No. 1	20.10 to 20.35
Southern Silvery, according to Silicon	16.90 to 19.15
Southern Coke, No. 1	16.40 to 18.65
Southern Coke, No. 2	15.65 to 18.15
Southern Coke, No. 3	15.15 to 17.65
Southern Coke, No. 1 Soft	16.40 to 18.65
Southern Coke, No. 2 Soft	15.65 to 18.15

Philadelphia.—The volume of business has diminished considerably during the past few days. Large consumers appear to be well covered for some time to come, so that the immediate demand is from small buyers, or those who have been disappointed, and are compelled to buy to tide over an emergency. There is a good deal of business of this kind. Sales have been within the limits named herewith. Occasional lots, due to special emergencies, have sold as high as $21 for No. 2 Foundry, but ordinarily about $1 less would be a fair average. Present prices will be about as follows for Philadelphia and nearby points:

	Deliveries to July.	Deliveries July to December.
No. 1 X Foundry	$20.50 to $21.50	$20.00 to $21.00
No. 2 X Foundry	19.75 to 20.50	18.50 to 19.00
No. 2, Plain	18.75 to 19.00	17.50 to 18.00

Pittsburgh.—No large lots of Pig Iron are being sold, mainly for the reason that the Iron cannot be had. Prices on Pig Iron are steadily advancing, and heavy premiums are being paid for Foundry Iron. The foundries are being held responsible for the advance in prices on Pig Iron, as it is said they are buying in excess of their actual requirements. No. 2 Foundry for reasonably prompt delivery, is about $21, Pittsburgh.

St. Louis.—No new features came up this week in the Pig Iron situation. Sales and inquiry are now said to be running on a light scale. Spot Iron brings all sorts of figures. No. 1 Foundry is said to have sold recently at prices ranging from $18.50 to $19, and figures proportionately as high are being paid for other grades. Iron is very scarce and will continue so for a while, as the furnaces, with but few exceptions, are sold for July, and are not authorizing heavy bookings for that month. We quote for cash, f.o.b. St. Louis, as follows:

Southern, No. 1 Foundry	$16.00 to $19.00
Southern, No. 2 Foundry	15.25 to 18.25
Southern, No. 3 Foundry	14.75 to 17.75
Southern, No. 4 Foundry	14.25 to 17.25
No. 1 Soft	15.75 to 18.75
No. 2 Soft	15.25 to 18.75

CHICAGO REPORT.

Scrap Iron and Steel.—The demand has fallen off considerably, while the supply seems to be increasing. We quote dealers' buying prices for carload lots, Chicago delivery, as follows:

	Per net ton.
Country Wrought Scrap	$14.00 to $14.50
Machinery Cast	.... to 13.00
Malleable Cast	12.00 to 12.50
Stove Plate (free from burnt)	10.00 to 10.50
Burnt Iron and Grate Bars	8.00 to 9.00
Sheet Iron and Hoops	8.00 to 9.00
Plow Steel	12.00 to 13.00
Breaking Stock	.... to 11.00
Old Boilers—whole (Iron)	9.50 to 10.00
Old Boilers (Iron) cut in single Sheets and Rings	12.00 to 12.50
Old Gas Pipes and Boiler Tubes	12.00 to 12.50
Cast Borings	7.00 to 8.00
Turnings	11.50 to 12.00
Horseshoes	14.00 to 14.50

Old Metals.—Business is quiet. Dealers quote buying prices on small lots as follows:

	Per lb.
Copper Wire and Heavy	11 c.
Copper Bottoms	10 c.
Copper Clips	11 c.
Red Brass	11 c.
Yellow Brass	8¼c.
Red Brass Borings	10 c.
Yellow Brass Borings	7¼c.
Light Brass	6½c.
Pipe Lead	3.60c.
Tea Lead	3.25c.
Zinc	2.75c.
Tin Foil	18 c.
Pewter, No. 1	15 c.
Pewter, No. 2	10 c.
Aluminum	20 c.

Old Rubber.—Dealers report trade light and stocks plentiful. Dealers' buying prices are as follows:

	Per net ton.	Per lb.
Garden Hose	$25.00	.....
Air Brake Hose	42.00	.....
Rubber Shoes	....	6¾c.
Rubber Car Springs	....	5 c.
Inside Bicycle Tubing	....	22 c.
Outside Tubing	....	6⅛c.
Black Rubber	....	4 c.
White Rubber	....	8¼c.

Rags.—The supply is still in excess of the demand. Good Country Mixed Rags, Chicago delivery, 70c. to 75c. per 100 lbs. in any quantity.

Anthracite Coal.—Trade is very brisk, buyers taking advantage of the low price to cover their wants for next winter. A discount of 50c. is allowed on the following schedule for all coal shipped in April:

	Grate.	Egg and Stove.
Chicago	$5.75	$6.00
Milwaukee, Wis.	5.75	6.00
St. Louis	6.20	6.45
Kansas City, Mo.	8.25	8.50

Paxton Hardware Mfg. Company, Paxton, Ill., are sending out a catalogue and price-list of Kitchen and House Furnishing Hardware, comprising Paxton Roaster and Baker, Prairie State Roaster and Baker, Lebanon Cake Cutter, Magnet Broom Holder, Lebanon Broiler, Combination Holder, Egg Beater and Potato Masher, Campers' or Portable Oven, Abell Coffee Pot, Combined Grater and Slaw Cutter, Enameled Repair Knob, Automatic Rope Attachment, Oriental Coffee Pot, Automatic Fire Proof Flue Stopper, Ventilating Stove Pipe Collar and Thimble combined, Fruit Jar Wrench, Paxton Poacher and Steamer, &c.

THE HARDWARE TRADE.

Reports indicate that trade throughout the country is in excellent condition and large volume. It is, however, feeling to some extent the effect of the spring activities. Travelers agree in reporting that labor throughout the country is so well employed and new enterprises are being so liberally projected that the stores generally are doing a large and profitable business. It is evident, too, that building during the season will be active. Prices on practically all lines of Hardware are firmly maintained, and in many departments there is an upward tendency. This condition is illustrated by the advance made during the past week in the price of Builders' Hardware. The difficulty experienced in obtaining many goods as promptly as the demands of the trade require gives additional firmness to values. The matter of jobbing consolidation has naturally been the subject of much discussion, and the different departments of the trade are canvassing it in the light of their individual interests. Export business is in very satisfactory shape, and the receipt of large and varied orders from foreign buyers is reported. In some lines the relatively high prices ruling in the home market have the effect of diminishing the amount of export business, but on the whole there is an increasing volume and an enlarging variety of Hardware and metal products going abroad. There is comparatively little complaint in regard to collections, and the financial situation of the trade in general is regarded as eminently satisfactory. It seems probable that the excellent record made by the opening months of the year will be continued, and the trade are looking forward to a large and profitable business during the remainder of the year.

NOTES ON PRICES.

Plumbers' Supplies.—New York jobbers say that the demand for Plumbing Supplies from the out of town trade has been exceptionally strong up to the present time. It is feared the journeymen in the outside districts are about to inaugurate a system of strikes which will harass the trade as it was never troubled heretofore. Already the towns along the Jersey shore are suffering from the strikes, and unless matters are promptly adjusted the business in that section will be spoilt for this spring and summer. It is to anticipate this trouble that the season's sales have been so voluminous at this early date. The business transacted so far this year is much greater than that of any previous year up to this time.

Sanitary Earthen Ware.—The Sanitary Potters' Association, according to all reports, have at last succeeded in bringing the trade into a profitable and stable position. This was done despite the fact that three manufacturing plants kept outside the association. The members of the association refuse to sell any of their wares to jobbing houses who persist in taking any of the products of the outside potteries. One large jobbing house in Pennsylvania have been taking the output of one of the outside plants, but as the supply house have a very large line of high grade and special pattern Closets, they were recently put to considerable annoyance by being refused further shipments of these special goods, which are made entirely by members of the Sanitary Potters' Association, who insist upon the jobbing house taking their entire wants from the association members alone. Prices of Sanitary Ware are very firm.

Wrought Iron Pipe.—Dealers in the entire metropolitan section are holding the prices of Wrought Iron and Steel Pipe very stiff.

Roofing Materials.—In another column we give details of the recent combination of the manufacturers of Coal Tar Products under the name of the Coal Tar Products Association of the United States of America, who have joined forces to regulate and advance prices in this line of goods. As the result, an average increase of approximately 20 per cent. has been made on Tarred Felts and Roofing Materials of this character.

Joseph T. Ryerson & Son, Chicago, are sending out what they term a "Bargain Bulletin," giving a list of odd sizes and lots of Black and Galvanized Sheets, Plates and Rivets, Boiler Tubes, &c., which they are closing out at reduced prices, to make room for regular stock.

Wire Nails.—The Wire Nail market continues in excellent condition. The volume of business is large and is expected to continue so for some time to come. There is some scarcity in the local market, owing to delays in deliveries, and dealers' assortments are somewhat broken. Small lots from store are quoted at $2.30 per keg.

Cut Nails.—Notwithstanding the fact that the price of Cut Nails is substantially the same as that of Wire Nails, there is a good demand for the former, and the mills, in fact, are unable to make prompt shipments. The trade in New York and territory is now in a very satisfactory condition, and with the large amount of building in progress and projected an active demand for Nails is likely to continue. Small lots of Cut Nails from store are quoted at $2.25 to $2.30 per keg.

Window Glass.—Following the conference between the National Window Glass Jobbers' Association, the American Window Glass Company and the Federation Window Glass Company, an advance of about 5 per cent. was made in the price of Window Glass by jobbers, which was considerably below the advance made to the jobbers by the manufacturers, which amounted to an average of about 13½ per cent. It was deemed best, however, by the jobbers to make only a moderate advance at this time, and to raise prices gradually as conditions would warrant.

White Lead.—No extensive movement in the way of new orders for White Lead in Oil has taken place during the week. With settled weather an increase in the daily consumption is expected to follow, and the outlook is favorable for an active season. Prices are firm and without change, small quantities being sold at 6½ to 6¾ cents per pound.

Linseed Oil.—The demand for Linseed Oil is restricted to comparatively small lots for immediate delivery, and the market appears firm at present prices, as sellers decline to make concessions to secure business. Small lots of City Raw are quoted at 64 to 64½ cents per gallon. Boiled Oil is 2 cents advance on Raw.

Spirits Turpentine.—A stronger market for Turpentine is reported from the South, as a result of surplus stocks being reduced and light receipts. At this point a fair business is doing in small lots, with a larger demand anticipated. Small lots of Turpentine are quoted about ½ cent higher than a week ago—viz., at 46½ to 47 cents per gallon.

Sad Irons.—Manufacturers of Sad Irons have advanced prices on these goods ⅛ cent a pound.

Builders' Hardware.—At a meeting last week the manufacturers of Builders' Hardware made a general advance of 20 per cent. On some goods, however, such as common Door Locks and Sliding Door Sets, the advance was not as heavy as on the general line. There is a disposition on the part of the manufacturers to maintain the new prices firmly, and the market on this class of goods is regarded as on the whole in excellent condition. The volume of business is large and the manufacturers are behind their orders.

TRADE NOTES.

The General Foundry Company is the title of a new concern at Gardner, Mass., in which Gustave Hoglund, for many years connected with the Central Oil Gas Stove Company, and several of the stockholders in the Simplex Time Recorder Company are interested. The company will build a foundry, 40 x 80 feet, electricity being used for power purposes.

The Ohio Iron & Metal Company have been incorporated at Chicago, with a capital stock of $50,000. The incorporators are Moses Dreyfus, Samuel Deutsch and Albert S. Lour. This is the incorporation of an established business in Old Material which has been conducted by the same parties in the Stock Exchange Building, Chicago, for several years.

The Osborn Mfg. Company, Cleveland, Ohio, have just issued a new catalogue, No. 90, covering Steel Wire, Bristle and Fiber Brushes and Brooms, Foundry Supplies and Hardware Specialties. It contains more than 100 pages, most of which are devoted to the very extensive line of Brushes and Brooms which they manufacture.

Strain & Hill have succeeded J. O. Strain in the Hardware, Stove and Farm Implement business in Jamestown, Kan.

New Incandescent Bulb.

E. E. Rines, an electrician, of Indianapolis, Ind., has invented an incandescent bulb by which the degree of illumination may be varied. Mr. Rines has been working on this device for a number of years, and claims to have now produced a lamp that is a perfect success. The invention is specially designed for dwellings, hotels and hospitals. It consists of an ordinary 16 candle power globe so arranged that it may be turned to use 8, 4 or 2 candle power, which is accomplished by using connections that are different from the old style and two filaments. By turning the globe a little the light may be reduced from 16 to 8 candle power; a further turn reduces it to 4, and still further to 2. Then, if it is desired to have 16 candle power again, a turn back makes the light bright again. Mr. Rines is a graduate of Cooper Institute and Columbia University, New York, and has been employed for a number of years with Thomas A. Edison.

An Acetylene Insect Trap.

M. Noël, director of the entymological laboratory at Rouen, France, is the inventor of a simple acetylene trap for catching all varieties of winged insects and moths, which, flying by night, do much damage, in their larval state, to agriculture. At a position in a field or orchard where the insects mostly congregate, a stand consisting of four posts driven into the ground, is erected in such a way as to support a barrel about 3 feet above the earth. The head of the barrel is knocked out, and the inside of the bottom coated with tin foil. It is laid on its side with the bunghole open and pointing upward. In the inside is placed a small acetylene lamp, the top of the lamp chimney being covered with metal gauze to prevent the moths getting in and perhaps extinguishing the light. A small acetylene burner is placed inside the cask, with the generator arranged somewhere underneath. Toward evening the interior surface of the cask is painted with molasses, and at dusk the lamp is lighted. The open bunghole allows the heat to escape, and the tin foil on the bottom acts as a reflector. The moths are attracted by the light, and are immediately caught by the sticky sides of the barrel. Each morning the apparatus can be cleaned out ready for use another day. This trap is employed from about the middle of May to the middle of June, at which time the destructive insects are most in evidence.

A telegram received by the American School of Correspondence, Boston, Mass., from the superintendent of an electric plant in one of the sections affected by the recent flood, requested information regarding the treatment of dynamos that have been submerged. An immediate reply was sent by wire, followed by fuller details by mail, so that, by the time the water had subsided enough to permit work, the superintendent was placed in possession of information as to what should be done. The American School of Correspondence has a special inquiry department for answering practical engineering questions such as this.

We have received from the Hampton Normal and Agricultural Institute of Hampton, Va., an invitation to be present at the thirty-fourth anniversary exercises of the institute, to be held in the gymnasium on Wednesday, April 23, when an address will be delivered by Governor A. J. Montague of Virginia. On Tuesday, April 22, a conference on "Southern Education" will be held at the institute, at which addresses are to be made by Rev. Paul R. Frothingham, Dr. Felix Adler, Dr. Albert Shaw, Dr. L. H. Bailey, Dr. Hamilton W. Mabie, Dr. Talcott Williams and other distinguished speakers.

The New York district of the National Foundrymen's Association, at a special meeting, held in New York City on Monday, decided to refuse the demand of the union iron molders for a nine-hour day. About 6000 workmen are affected.

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ROOFING SUPPLIES, METALS, TIN PLATES, &c.

REVISED APRIL 18, 1902.

Aluminum—

No. 1 Aluminum (guaranteed over 99% Pure), in ingots for remelting.

Small lots	℘ ℔, 37¢
100-℔ lots	℘ ℔, 35¢

Aluminum Sheet, B. & S. gauge.
In lots of 50 ℔s or more.

Wider than	6-in.	14-in.	24-in.
And including	14-in	24-in.	30-in.
	℘ ℔	℘ ℔.	℘ ℔.
Nos. 13 to 19	$0.42	$0.44	$0.47
" 20	.44	.46	.49
" 21 to 23	.46	.48	.51
" 24	.46	.50	.53
" 25	.47	.51	.54
" 26	.47	.54	.59
" 27	.48	.57	.62
" 28	.48	.57	.64
" 29	.49	.60	.69
" 30	.50	.64	.77

Note.—Lots of less than 50 ℔s 5¢ ℘ ℔ extra.

Antimony—

Cookson	℘ ℔. 10¼@10¾¢
Hallett's	℘ ℔, 8⅜@8¾¢
U. S.	℘ ℔ 8⅛@8½¢

Brass, Roll and Sheet...... 30%

Conductors— Corrugated.

Round or Square.—

Galvanized ½ or more. N'st'd	70&5%
" Not Nested	70&2½%
" Plain Round, ½ or more, Nested	70&5%
Galvanized, Plain Round, Not Nested.	70&2½%

Spiral Riveted.

Galvanized	40%

See also *Elbows and Shoes; Eave Trough Miters; Strainers, Conductor.*

Conductor Strainers—

See *Strainers, Conductor*

Copper—

Lake Ingot	13¼@13¾¢
Casting	13 @13¼¢
Sheet and Bolt	18¢ ℘ ℔ basis
Cold Rolled Sheets	19¢ ℘ ℔ basis
Cold Rolled and Polished Sheets	20¢ basis
Planished Sheets	21¢ basis
Bottoms, Pits and Flats	℘ ℔ 22¢ basis

Eave Trough Galvanized

Territory	L. C. L.
Eastern	75&10%
Central	75&7½%
Southern	70&12½%
S. Western	70&10%

Terms, 2% for cash.

Eave Trough Mitres—

Lap or Slip Joint	list, 25%

Elbows—Plain Adjustable—

Eastern List.

Tin	30%
Galvanized	30%
Perfect Elbows	40%

Stove Pipe—

Four-Piece	4	4½	5	5½	6-inch.
No. 1.	$0.80	.85	.90	1.00	1.05 per doz.
No. 2.	.65	.70	.75	.80	.85 "
No 3.	.60	.63	.65	.70	.80 "

Elbows and Shoes—

Galvanized	60%

Gasoline—

See *Petroleum Products.*

Iron, Sheet—*Black.*

	One Pass, C. R. Soft Steel.	R. G. Cleaned.
Nos. 14 to 16	℘ ℔. 3.50	3.55¢
Nos. 18 to 21	℘ ℔, 3.60	3.65¢
Nos. 22 to 24	℘ ℔, 3.70	3.75¢
Nos. 25 and 26	℘ ℔, 3.80	3.85¢
No. 27	℘ ℔, 3.90	3.95¢
No. 28	℘ ℔, 4.00	4.05¢

Russia, Planished, &c.

Genuine Russia, according to assortment	℘ ℔ 11@14 ¢
Do. Stained	6@10½¢
Patent Planished	℘ ℔ A, 11¢; B, 10¢ net

Galvanized.

Nos. 10 to 16	℘ ℔, 12¢	70@70&2½% off
Nos. 17 to 21	℘ ℔, 13¢	
Nos. 22 to 24	℘ ℔, 14¢	
Nos. 25 to 26	℘ ℔, 15¢	
No. 27	℘ ℔, 16¢	
No. 28	℘ ℔, 17¢	
No. 29	℘ ℔, 19¢	
No. 30	℘ ℔, 21¢	

36 in. 1¢ ℘ ℔ higher.

Lead—

American Pig		4.45@4½¢
Bar		5@5⅛¢
Pipe	6½¢	20% off
Tin Lined Pipe	12½¢	20% off
Block Tin Pipe	35 ¢	20% off
Sheet Lead	7¼¢	20% off

Old Lead in exchange, 3¼¢ ℘ ℔.

Mitres Eave Trough—

See *Eave Trough Mitres.*

Nickel—

Per ℔	55@60¢

Paints Oils &c.—

Leads—

Lead, American White, in Oil:		
Lots of 500 ℔ or over	6¼	@ 6½
Lots less than 500 ℔	6½	@ 6¾
Lead, White, in oil, 25 ℔ tin pails, add to keg price		@ ½
Lead, white, in oil, 12½ ℔ tin pails, add to keg price		@ 1
Lead, White, in oil, 1 to 5 ℔ assorted tins, add to keg price		@ 1½
Lead, White, Dry in bbls	5¾	@ 6
Lead, Red, bbls., ½ bbls. and kegs:		
Lots 500 ℔ or over		@ 6
Lots less than 500 ℔		@ 6½

Oils—

Linseed, City, raw	℘ gal...64@64½¢
Linseed, City, boiled	66@66½¢
Linseed State and West'n, raw	63@63½¢

Spirits Turpentine—

In Southern bbls	46½@47 ¢
In machine bbls	47½@48 ¢

Putty—

In bulk	$1.25
In bladders	2.25
In cans 12 ℔ to 25 ℔	2.25
In cans 1 ℔ to 5 ℔	3.25

Petroleum Products—

In Barrels (Barrel Included)

Stove Gasoline	℘ gal. 10½@11¢
Kerosene.	℘ gal. 12@13¢

Pipe Drain...... 40%

Pipe, Spiral—

See *Conductors.*

Registers—

List Sept. 2, 1901.

Black Japanned	60&10@60&10&5%
White Japanned	60&10@60&10&5%
Nickel Plated	60&10@60&10&5%
Bronze Finishes in Imitation of Gold, Silver, Copper or Bronze	60&10@60&10&5%
Electroplated in Brass, Bronze or Copper	60&10@60&10&5%
White Porcelain	60%
Solid Brass and Bronze Metal	50%

Roofing Material—

1 Ply Tarred Paper.	℘ ton. $31.00@32.00
2 Ply Tarred Paper...℘ roll, 108 sq. ft.	55@60¢
3 Ply Tarred Paper..℘ roll, 108 sq. ft.	80@85¢
Slater's Felt	℘ ton, $35.00@36.00
Roofing Pitch	℘ bbl. $2.50

Rosin—

Common and Good—Strained.

Rosin, C. & D.	℘ bbl. $1.62½@$1.65
Rosin, E. & F.	℘ bbl. 1.72½@ 1.75
Rosin, G. & H	℘ bbl. 1.77½@ 1.80
Rosin, I. & K.	℘ bbl. 2.10 @ 2.15
Rosin, M. & N.	℘ bbl. 3.05 @ 3.60

Shoes and Elbows—

See *Elbows and Shoes.*

Slate Roofing—

f. o. b. cars, Quarry Station.

	According to size.
Pennsylvania:	
Best Bangor, ℘ sqr.	$3.25@$4.50
No. 1 Bangor Ribbon. ℘ sq	3.00@ 3.50
Pen Argyle. ℘ sqr.	3.00@ 3.75
Peach Bottom, ℘ sqr.	4.85@ 5.60
No. 1 Boys, ℘ sqr.	3.35@ 3.55
No 1 Chapman Keystone. ℘ sqr	3.25@ 4.25
Vermont:	
Sea Green, ℘ sqr	$2.00@$3.25
Purple, ℘ sqr	3.75 @ 4.25
Unfading Green, ℘ sqr.	3.25@ 4.50
Red, ℘ sqr.	7.00@11.00
Maine:	
Brownville. Unfading Black.	
No. 1 quality	$5.25@7.50
No. 2 quality	$4.25@6.00

Solder—

½&½ guaranteed	18½@19 ¢
No. 1	16 @17½¢

Prices of Solder indicated by private brands vary according to composition

Soldering Fluids—

	Per Pound. Barrels	Per Pound. Smaller Q'ntities
Concentrated Flux	4c	5c
Eureka Flux:		
Triple Strength	3c	3½c
Extra Concentrated	4½c	5c
Crystal		7c
Gedney's Fluid	2c	2c
Lennox Fluid	2c	3c
Perfection Flux	3c	3½@4c
Yager's Salts, 1 lb. bottles		each, 50¢
5 lb. bottles, per lb., 45¢		

Soldering Coppers—

Per ℔	20@22¢

Spelter—

Western Spelter	4.60@4.70¢

Spiral Pipe—

See *Conductors.*

Stove Pipe Elbows—

See *Elbows, Stove Pipe.*

Stove Trucks—

See *Trucks, Stove.*

Strainers, Conductor—

Galvanized	50%

Tin Pigs and Bars—

Banca, pigs. ℘ ℔	29½@29¾¢
Straits, pigs. ℘ ℔	29½@29¾¢
Straits, in bars, ℘ ℔	30½@30¾¢

Tin Plates, American

Charcoal Plates, Bright—

N. B.—The price of 20 x 28 sizes is double the price of 14 x 20.

Calland Grade:		
IC,	14 x 20	$7.50
IX,	14 x 20	9.00
IXX,	14 x 20	10.25
IXXX,	14 x 20	11.50
IXXXX.	14 x 20	12.75
Melyn Grade:		
IC,	14 x 20	7.00
IX,	14 x 20	8.50
IXX,	14 x 20	9.75
IXXX,	14 x 20	11.00
IXXXX	14 x 20	12.25
Allaway Grade:		
IC,	14 x 20	6.50
IX,	14 x 20	7.60
IXX,	14 x 20	8.70
IXXX,	14 x 20	9.80
IXXXX.	14 x 20	10.90

Coke Plates, Bright—

Bessemer Steel, or equal to J. B. Grade, full weight	IC, 14 x 20	$4.90@5.00
" "	IX, 14 x 20	$6.00

N. B.—The reduction per box on lighter Plates than IC, 14 x 20, is as follows:

100 ℔	15¢
95 ℔	20¢
90 ℔	25¢
85 ℔	30¢

Terne Plates—

N. B.—The following prices are for IC 20 x 28, the rate for 14 x 20 being half as much. IX is usually held at $2 per box advance for 8 to 10 ℔ coating and $2.50 to $3 advance for 15 ℔ and upward.

About 40 ℔ coating	$16.00@16.50
About 30 ℔ coating	15.25@15.75
About 20 ℔ coating	13.25@13.75
About 15 ℔ coating	11.25@11.75
About 8 ℔ coating.	@10.00

Boiler Plates, American—

IXX, 14 x 26..(112 sheets)	$12.50
IXX, 14 x 28..(112 sheets)	13.50
IXX, 14 x 31..(112 sheets)	15.00

Troughs Eave—

See *Eave Trough.*

Trucks, Stove—

Improved Lock Frame, per doz.	$15.00
Steel Lock Frame, per doz.	18.00
Daisy Improved pattern, ℘ doz.	18.00

Tubes and Tubing—

Brazed Brass, List June 6, 1898	40%

Copper and Bronze, 3c per lb. list more than Brass.

Seamless Brass Tubes. net list Feb. 6 1899

Tin	50%
Galvanized	50%
Fittings for do	40%

Zinc—

600 ℔ casks ℘ ℔	6¾¢
Per ℔	7¼¢

PLUMBERS' AND STEAM FITTERS' SUPPLIES.

Boilers, Galvanized—

Standard Boilers:	
30 gal.	70&10%
35 and 40 gal	70%
Other sizes up to 52 gal.	60@60&10%
52 gal. and above	60%
Extra Heavy Boilers:	
18 to 52 gal	60%
53 gal. and above	55%

Brass Work, Plumbers'—

List of December 7, 1896.

Compression:	
Basin Cocks	65%
Bath Cocks and Double Bath Cocks	65%
Bibs.	65%
Bibs, Flanged	65%
Fuller:	
Bibs	70%
Basin Cocks, Nos. 1 to 4	70%
Bath Cocks, No. 4½	$2.40 each net
Ground Key Work:	
Finished Bibs	55&5%
Rough Bibs	70%
Rough Stop and Stop and Waste Cocks	70@70&5%
Rough Stop and Stop and Waste Cocks, Patented	65@65&5%

Miscellaneous—

Basin Clamps	60@65%
Basin Plugs	60@65%
Chain Stays.	60&5@70%

Iron Boiler Couplings:

		Lead Pipe.	Iron Pipe.
Plain Face	℘ set	$0.95	$1.05
Ground Face	℘ set	$1.00	$1.10

Sink or Bath and Wash Tray Plugs	60@65%
Soldering Nipples	70&5@75%
Soldering Unions	70&5@75%
Union Elbows. Hot Water Heating	75@75&15%

Cocks, Valves, &c.—

Cocks—

Brass—

Air and Radiator Air	75@75&5%
Gas Meter and Union Meter	65@70%
Steam	65@70%

Iron—

All Iron	70@70&10%
Iron with Brass Plugs	65@70%

Valves—

Brass—

Check	65@70%
Garden Hose	65&10@70%
Gate.	65@65&10%
Globe and Angle, hose outlet	65@65&10%
Globe, Angle and Cross	65&10@70&5%
Horizontal, Vertical and Angle Check	65@65&10%
Hot Water Radiator	75%
Radiator	70&10%
Safety	65%
Safety, Low Pressure	65%
Jenkins' Disc:	
Check	65%
Gate	65%
Globe, Angle and Cross	70%
Radiator	80%
Radiator, Corner	75%
Safety	65%

Iron—

Iron Body	70@70&5%
Foot	65@70%
Jenkins Bros.':	
All Iron, except Gate	40&5%
All Iron Gate	35@40%
Iron Body, except Gate	60%
Iron Body Gate	50@50&5%
Swing Check	50%

Earthenware—

Brown Glazed Wash Tubs	20%
Brown Glazed Sinks, Kitchen and Pantry	20%
Basins, Urinals and Hoppers	45%
Closet Bowls, Sundries, Washouts and Pedestals	50%

Fittings—

Brass Fittings—

Finished	70@75%
Rough	70@75%
Bushings	70@75%
Nipples	70@70&2½%
Unions, Rough and Finished	70@70&5%

Iron—

Cast Iron Fittings, Black and Galvanized, Standard sizes	65@70%
Cast Iron Bushings and Plugs	65@70%
Cast Iron Flanges	65@70%
Cast Iron Floor Flanges	65@70%
Malleable Iron Fittings (from ℔ list)	50%
" " Bushings	65@70%
" " Unions	65@70%
" " Unions, Flange	60&10@70%
" " Pipe Hangers, Universal	50%
Wrought Iron Nipples	65@70%
" " Couplings	60@65%
" " Long Screws	60@65%

Lavatories—

Porcelain Enameled Iron	30@30&10%

Oakum—

Plumbers' Oakum, 50 lb. bales, ℘ ℔	2½¢

Pipe—

Brass, Iron Pipe Size—

⅛	¼	½	¾ to 3 Inch
$0.38	.34	.29	.28 ℘ ℔

Cast Iron Soil—

List Feb. 25, 1901.
2 to 6 inch inclusive.

Standard	50&5%
Extra Heavy	60&7½%
All Fittings	65&10%

7 to 15 inch.

Pipe and Fittings, Standard and Extra Heavy	50%

Wrought Iron—

List Feb. 15, 1900.

	Black.	Galv
⅛ to ½ inch	55%	41%
¾ to 12 inch	65%	50%

Radiators—

Standard List.

Steam	50&2½%
Hot Water	50%

Sinks, Etc.— Cast Iron—

	Black.	Galv
Sinks, Square, Half Round and Corner	60@65%	60@65%
Sink Legs.	60%	60@65%
Sink Backs	60%	60@65%
Boiler Stands, Cast Iron	60@60&10%	
Cesspools, Cast Iron	60%	

Wrought Steel Sinks—

New Era, Galv'd and Enameled.	70&5%
New Era, Painted	50&10%
L. & G.	50%

Traps—

Drawn Lead Traps, List June 3, 1901	50&5%

Tubs, Bath—

List April 1, 1902.

Cast Iron Enameled Bath Tubs.	
Regular Patterns. Guaranteed.	30%
All Special Patterns	15%
Solid Copper, list of Feb. 1, 1899	40%
Solid Porcelain—Class A, 30%; B, 40%; C, 50%.	
Steel Clad Copper Lined, list of Feb. 1, 1899	50@55%

ALPHABETICAL LIST OF ADVERTISERS.

Adam. W. J. 27
American Blower Co. 18
American Furnace Co. 17
American Galvanizing Wks. 65
American Radiator Co. 19
American Sheet Steel Co. .... 1&68
American Steam Gage & Valve Mfg. Co. 1
American Steel Roofing Co. 66
American Tin Plate Co. 68
Anderson Coupling Co. 27
Asphalt Ready Roofing Co 69
Anld & Conger Co. 64
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Berger Mfg. Co 70
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Bertsch & Co. 74
Bliss, E. W. Co. 74
Blodgett, G. S. Co. 16
Bonnot Co. 18
Boynton Furnace Co. 18
Brand Stove Co. 8
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Stove Linings.
Bridgeport Crucible Co., Bridgeport, Conn.
McLeod & Henry Co., Troy, N. Y.
Marcy Stove Repair Co., 74 Beekman St., N. Y.
Presbrey Stove Lining Co., Taunton, Mass.
Rutland Fire Clay Co., Rutland, Vt.
Valentine, M. D. & Bro. Co., Woodbridge, N. J.
Williams Stove Lining Co., Taunton, Mass

Stove and Metal Polish.
Hoffman, Geo. W., Indianapolis, Ind
Rutland Fire Clay Co., Rutland, Vt.

Stove Patterns.
Cope, G. W., Detroit, Mich.
Gobeille Pattern Co., Cleveland, O.
Milwaukee Pattern Works, Milwaukee, Wis.
Vedder Pattern Works, Troy, N. Y

Stove Pipe.
Triumph Adjustable Stove Pipe Mfg. Co., Peoria, Ill.

Stove Pipe Thimbles.
City Forge & Iron Works, Dayton, O.
O. K. Mfg. Co, Buffalo, N. Y.

Stove Repairs.
Clark, Henry N. Co., Boston, Mass.
Heath, C. C. & Co., Phila., Pa.
Howes, S. M. Co., Boston, Mass.
Marcy Stove Repair Co., 74 Beekman St., N. Y.
Metropolis Sheet Metals & Stove Repairing Co., Newark, N. J.
Troy Nickel Works, Troy, N. Y.

Stove Trimmings, &c.
Fanner Mfg. Co., Cleveland, O.
Shields, W. H. & Co., Troy, N. Y.
Troy Nickel Works, Troy, N. Y

Stove Trucks.
Howes, S. M. Co., Boston, Mass.
Tucker & Dorsey Mfg. Co., Indianapolis, Ind.

Stoves and Ranges.
Barstow Stove Co., Providence, R. I.
Beckwith, P. D., Est. of, Dowagiac, Mich.
Bergstrom Bros. & Co., Neenah, Wis.
Boynton Furnace Co., 207 Water Street, New York.
Brand Stove Co, Milwaukee, Wis.
Dighton Furnace Co., Taunton, Mass.
Enterprise Stove Co., Vincennes, Ind.
Floyd, Wells & Co., Royersford, Pa.
Fuller & Warren Co., Troy, N. Y.
Graff Furnace Co., 208 Water Street, New York.
Hess-Snyder Company, Massillon, O.
Joliet Stove Works, Joliet, Ill.
Magee Furnace Co., Boston, Mass.
Miller, Wm. Range & Furnace Co., Cincinnati, O.
Ohio Stove Co., Portsmouth, O.
Pittsburgh Stove & Range Co., Pittsburgh, Pa.
Quincy Fdry. & Novelty Co., Quincy, Ill.
Richmond Stove Co., Norwich, Conn.
Sheppard, Isaac A. & Co., Phila., Pa.
Smith & Anthony Co., Boston, Mass.
Somerset Stove Foundry Co., Somerset, Mass.
Stamford Foundry Co., Stamford, Ct.
Van, John, Range Co., Cincinnati, O.
Weir Stove Co., Taunton, Mass
Willard, Wm. G., St. Louis, Mo.

Stoves and Ranges, Gas.
Dighton Furnace Co., Taunton, Mass.
Metropolis Sheet Metals & Stove Repairing Co., Newark, N. J.

Stoves and Ranges, Oil, Vapor and Gasoline.
Cleveland Foundry Co., Cleveland, O.
Heath, C. C. & Co., Philadelphia, Pa.
Taylor & Boggis Foundry Co., Cleveland, O.

Street Lamps, Gasolene.
Merkel, H., St. Louis, Mo.

Tank Heaters.
American Radiator Co., Chicago, Ill.

Tanks, Steel and Wood.
Edwards, J. H., 59 Park Place, N. Y.

Terne Plates.
American Tin Plate Co., New York.
Taylor, N. & G. Co., Phila., Pa.

Tinners' Tools, Machines and Supplies.
Berger Bros. Co., Phila., Pa.
Bertsch & Co., Cambridge City, Ind.
Bliss, E. W. Co., Brooklyn, N. Y.
Bruce & Cook, 186 to 190 Water St., New York.
Follansbee Bros. Co., Pittsburgh, Pa.
Keene, Geo. C. & Co., Cincinnati, O.
Niagara Machine & Tool Wks., Buffalo, N. Y.
Ohl, Geo. A. & Co., Newark, N. J.
Peck, Stow & Wilcox Co., 27 Murray St., New York.
Stiles & Parker Press Co., Brooklyn N. Y.
Weiss, H. & Co., 20 Cliff St., N. Y

Tinners' Trimmings.
Vogel, Wm. & Bros., Brooklyn, N. Y.

Tin Plate.
American Tin Plate Co., New York.
Bruce & Cook, 186 to 190 Water St., New York.
Coe, Jas. A. & Co., Newark, N. J.
Follansbee Bros. Co., Pittsburgh, Pa.
Gummey, McFarland & Co., Phila., Pa.
McClure & Co., Pittsburgh, Pa.
Meurer Bros. Co., Brooklyn, N. Y.
Osborn, J. M. & L. A., Cleveland, Ohio.
Taylor, N. & G. Co., Philadelphia, Pa.

Tin Scrap.
Vulcan Metal Refining Co., 157 Cedar St., N. Y.
Vulcan Western Co., Streator, Ill.

Tinware.
Shepard, Sidney & Co., Buffalo, N. Y.

Tools and Machines, Steam and Gas Fitters'.
Curtis & Curtis Co., Bridgeport, Conn.
Saunders', D. Sons, Yonkers, N. Y.

Torches, Plumbers.
Clayton & Lambert Mfg. Co., Detroit, Mich.

Tubing.
Kirk Mfg. Co., Toledo, O

Valves.
Am. Steam Gage & Valve Mfg. Co., Boston, Mass.
Crosby Steam Gage & Valve Co., Boston, Mass.
Jenkins Bros., 71 John St., New York.
Morgan & Co., Chicago.

Ventilating Apparatus.
American Blower Co., Detroit, Mich.

Ventilators and Chimney Caps.
Berger Bros. Co., Phila., Pa.
Fenn, Geo. E., Boston, Mass.
Globe Ventilator Co., Troy, N. Y.
Kramer Bros., Dayton, O.
Meurer Bros. Co., Brooklyn, N. Y.
Washburne, E. G. & Co., 46 Cortlandt St., New York.

Washers, Valves, &c.
Littleford Bros., Cincinnati, O.
Marston, I. G. & Co., Boston, Mass.

Washing Machines.
Wayne, Anthony Mfg. Co., Ft. Wayne, Ind.

Water Coolers.
National Enameling & Stamping Co., 78 Beekman St., N. Y

Water Closets.
Colwell Lead Co., 63 Centre St., N. Y.
Zero Valve & Brass Mfg. Co., Buffalo, N. Y.

Water Fronts.
Clark, Henry N. Co., Boston, Mass.

Water Heaters.
Adam, W. J., Joliet, Ill.
Kemp, C. M. Mfg. Co., Baltimore, Md.

Wind Gates.
Miner & Peck Mfg. Co., New Haven, Ct.

SEE ALPHABETICAL INDEX, PAGE 57.

THE METAL WORKER.

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HELP WANTED.

A No. 1 WORKING FOREMAN; one who is capable of detailing, cutting and constructing galvanized iron cornice and skylight, blow pipe, tin and slate roofing; must be capable to take charge of shop from eight to twelve men; state age, nationality, what wages wanted and where last employed; must be a fast worker and strictly temperate. Berry Hardware Company, Clarksburg, W. Va. Apr. 19

A FORMER and POWER PRESS HAND; must have experience and can run a cornice press. Apply to "W. A. R.," care *The Metal Worker*, New York. Apr. 19

A first-class TINNER; must be a good tin roofer; good on furnace work and general jobbing; state experience; also a first-class PLUMBER; state experience; must be strictly sober and reliable. W. H. Stoyle, Huntington, L. I., N. Y. Apr. 19

An all around man at once who can do plumbing and tinning; state wages; steady job year round; married man preferred: correspondence expected at once. C. Q. Allen, Bowling Green, Ohio. Apr. 19

A good TINNER who thoroughly understands his business; steady work; weekly wages. Call afternoon from 2 to 4, Manning, Bowman & Co., 25 West Broadway, New York. Apr. 19

All round TINNER; one who can do furnace work, spouting and roofing; state age, wages wanted and if sober and can take charge of work. J. M. Reed, Barberton, Ohio. Apr. 19

At once, first-class FORMER and SLATE ROOFER; must be A1 in every particular; steady job the year through; answer at once, stating wages, age and experience. Brucks & Krantz, Canal Dover, Ohio. Apr. 19

First-class TIN and SHEET IRON WORKER; one who understands hot air heating, pump and iron pipe work; none but first-class man need apply; state wages, age and reference from last employer; must have tools. John F. Ryan, 635 Broadway, Kingston, N. Y. Apr. 19

An all round man to do PLUMBING and TINSMITHING; must be married and temperate. L. P. Smith, Camden, N. Y. Apr. 19

A first-class TINNER with knowledge of iron pipe, pumps, wind mills and general job work in a country shop; must be sober and reliable; steady work to capable man at good wages; state age, experience, &c. B. F. Rockhill, Columbus, N. J. Apr. 19

Three or four good TIN, SLATE, GALVANIZED IRON and GENERAL SHEET METAL WORKERS; steady work and good wages to sober and reliable man; must be union men. Box 1, Station A, Chattanooga, Tenn. Apr. 19

STOVE SALESMEN of experience for Illinois, Iowa and Wisconsin; state former employer and amount of sales. "Salesman," care *The Metal Worker*, Park Building, Pittsburgh, Pa. Apr. 19

At once, two good TINNERS and SLATERS; steady employment to the right men. J. B. Crowl, Alliance, Ohio. Apr. 19

An experienced FOREMAN to take charge of a small factory manufacturing all kinds of tinware and japanned ware; one who is capable of figuring costs, &c. The Cincinnati Tin & Japan Company, southeast corner Sycamore and Canal streets, Cincinnati, Ohio. Apr. 19

At once, a competent PLUMBER and STEAM FITTER; union man; eight hours. Apply D. W. Bovett, Pittsfield, Mass. Apr. 19

Two good men who can do tin and slate work. Jos. H. Brice, 222½ West Chestnut street, Washington, Pa. Apr. 19

At once, two PLUMBERS; sober and industrious; give references. Sargent & Fulton, Sunapee, N. H. Apr. 19

A first-class PLUMBER and TINNER for country town; steady work; wages $2 per day; answer at once. Box 281, Montrose, Susquehanna County, Pa. Apr. 19

An A1 PLUMBER, STEAM and HOT WATER FITTER; one that can do tin work; must be steady and sober; to the right man steady work the year through; send references and state wages expected. P. E. Faleigh, Red Hook, N. J. Apr. 19

Six good CORNICE MAKERS, also one SLATER; must be sober men; no others need apply. Hofer Bros., Toledo, Ohio. Apr. 19

Wanted, a good TINNER not over 30 years old, understanding all branches of the work; steady work every day in the year to the right party; wages, $2 per day. J. H. Jones, 414 East Main street, Steator, Ill. Apr. 19

Young man to take charge of shipping and act as FLOOR SALESMAN, by large manufacturer of heating apparatus; must be bright and energetic; opportunity for advancement if competent; state full particulars. "F. & R.," care *The Metal Worker*, New York. Apr. 19

A first-class PLUMBER who can do a good job of tin work; to a good man a steady job will be given the year round at good wages. Frank R. Jarrell, Lexington, Ky. Apr. 19

A TINSMITH; one who has some knowledge of plumbing; an all round man who is able to take care of the variety of work which comes to a country shop; a job by the year to the right man. Percy J. Barlow, Adams, N. Y. Apr. 19

One or two strictly first-class HOT AIR FURNACEMAN: wages, $3 per day; eight hours' work; steady work. Royal Heating Company, 210 Mason street, San Francisco. Apr. 19

One first-class TINNER. I. E. Bender, Summerhill, Pa. Apr. 19

An experienced SALESMAN to sell stoves in Southern Indiana, Illinois, Kentucky and Tennessee. "Indiana," care *The Metal Worker*, New York. Apr. 19

TIN and SHEET METAL WORKER who can do plumbing and can play some part in brass band preferred; must be sober; good wages and steady work to right man. W. B. Cox, Williamson, W. Va. Apr. 19

Strictly sober TINSMITH; yearly contract; $2.50 per day; also PLUMBER who can occasionally do a small steam job; yearly contract. "Quick," care *The Metal Worker*, New York. Apr. 19

POWER CORNICE PRESS HAND; an experienced, intelligent, faithful man desired. David Lupton's Sons, Alleghany avenue and Tulip street, Philadelphia, Pa. Apr. 12

Five first-class SHEET METAL WORKERS; steady employment guaranteed if satisfactory. Klauer Mfg. Company, Dubuque, Iowa. Apr. 12

SITUATIONS WANTED.

By a first-class PLUMBER with a general knowledge of steam, hot water and furnace heating; am familiar with either city or country work; am married, strictly temperate and reliable; am 31 years old; can give the best of references; wages not less than $3 per day: must be in New England, Massachusetts preferred. W. C. Swinington, 1109 West Duval street, Jacksonville, Fla. Apr. 19

TINSMITH and SHEET IRON WORKER; understands furnace and general jobbing; all around man; steady work wanted. L. Mickenberg, 27 Seigel street, Brooklyn, N. Y. Apr. 19

STEAM and HOT WATER FITTER with knowledge of plumbing; strictly temperate and could take full charge from plans and specifications. Wm. A. Bennett, 739 Summer avenue, Newark, N. J. Apr. 19

Experienced BOOKKEEPER and OFFICE MAN with A1 character is open for engagement. Reference furnished. "Accountant," 5518 Center street, Pittsburgh, Pa. Apr. 19

As SALESMAN or MANAGER of stove foundry, by a first-class man of 26 years' experience; good reference; understands his business thoroughly and has been manager for some time. Box 469, P. O., Louisville, Ky. Apr. 19

PLUMBER, 21, would like steady position, in country preferred; wages very moderate and recommendation furnished; willing to fill in time at tinsmithing. "Plumber," care E. Spindler, 362 Eighth avenue, New York. Apr. 19

As FOREMAN in cornice shop by an experienced man, 40 years of age; capable of estimating at close figures; strictly temperate and honest worker at bench and outside; wages not less than $4. "B. L.," 848 Glenmore avenue, Brooklyn, N. Y. Apr. 19

By a first-class PLUMBER and GAS FITTER; city or country. Peter J. Gallagher, 307 East 105th street, New York. Apr. 19

By a first-class TINSMITH, SHEET IRON WORKER and GENERAL JOBBER, also acquainted in the line of roofing; temperate and reliable; ten years' experience. Samuel Kremer, care Wulfahrt, 1624 Madison avenue, New York. Apr. 19

By a steady, sober and reliable TINSMITH; ten years' experience at in and outside work; pump, wind mill and iron pipe work, also steam fitting and furnace work; will work for $11 per week for steady position year around; references. "G. T.," Whitesboro, N. Y. Apr. 19

By thoroughly competent and first-class PLUMBER and GAS FITTER in country shop for the season, where good work is remunerative; wages $3. Joseph Grinnell, 64 St. Mark's Place, New York. Apr. 19

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A first-class, experienced SANITARY PLUMBER wishes work; city or country, country preferred. Fred U. Staley, 142 Third street, Union Hill, N. J. Apr. 19

By young man (21), as a SHEET IRON WORKER'S HELPER; place where he can handle tools preferred. P. Paucek, 338 East Seventieth street, New York. Apr. 19

As FOREMAN and CUTTER in cornice and roofing shop; position wanted by first-class mechanic who thoroughly understands the business in every detail; best of references. Box 46, care *The Metal Worker*, 1205 Fisher Building, Chicago, Ill. Apr. 19

SALESMAN with an established trade amog the hardware, stove and house furnishing trade through Virginia, North Carolina, South Carolina and Georgia is open for an engagement. "Salesman," 519 Freemason street, Norfolk, Va. Apr. 19

By a practical PLUMBER and STEAM FITTER; 14 years' experience; can estimate from plans and plan work; capable of taking charge of work; a neat and quick workman and a hustler and up to date; will go to work on trial; correspondence for a steady position only solicited. "Plumber and Fitter," care *The Metal Worker*, New York. Apr. 19

By a practical man with 20 years' experience as SUPERINTENDENT or FOREMAN in a cornice or skylight shop; can do drafting, cutting, estimating, also can handle men to advantage; best references. Emrih Kunag, 76 Avenue A, New York. Apr. 19

By a first-class PATTERN FITTER on furnaces, ranges and heaters; best references. A. Boudreau, 341 Marion street, Brooklyn, N. Y. Apr. 19

A steady position by TINNER who understands roofing; also has some knowledge of plumbing, steam heating and furnace work; State of Pennsylvania preferred; reference furnished. Lock Box 133, Hammondsport, N. Y. Apr. 19

Expert NICKEL PLATER AND POLISHER; fine workman; steady; will guarantee to save money for employer; piece work or reasonable salary. "Nickel Contractor," care *The Metal Worker*, New York. Apr. 19

By young man with two and a half years' experience to finish the trade at plumbing and heating. "A. W.," 213 William street, Clearfield, Pa. Apr. 19

By a practical PLUMBER, STEAM and GAS FITTER; one who can estimate on all kinds of work; no objection to going out of city. "C. S.," care *The Metal Worker*, New York. Apr. 19

Am well equipped in foundry practice; can render excellent service in the running and general care of stove or heater business; have had splendid experience; 31 years old; good references. "P. G.," care *The Metal Worker*, New York. Apr. 19

As FLOOR SALESMAN and SHIPPING CLERK with furnace, range, steam or hot water concern; experienced; references. "A. F.," care *The Metal Worker*, New York. Apr. 19

By a licensed MASTER PLUMBER as SOLICITOR of trade in the steam, gas and plumbers' material line for the Greater New York and vicinity. "Solicitor," care *The Metal Worker*, New York. Apr. 19

By man of long and varied general business experience, of executive ability and unquestionable character, engagement to open and manage branch store in the steam, gas and plumbers' supplies in either or all the principal boroughs of the Greater New York. "Branch Stores," care *The Metal Worker*, New York. Apr. 19

By a first-class CORNICE, SKYLIGHT MAKER and CUTTER; able to lay out work and handle men; can do only light work on account of a weak arm received by fall; reasonable wages; no union. "J. K.," care *The Metal Worker*, New York. Apr. 19

By young man (27), strictly temperate, with some good hardware concern as CLERK; has had experience in the hardware line; best of references. "F. J. T.," care *The Metal Worker*, New York. Apr. 19

By thorough RETINNER and GALVANIZER; up to date in all branches of the business; formerly with the Iron Clad. John J. Dwyer, 123 Navy street, Brooklyn, N. Y. Apr. 19

STOVE and HEATER SALESMAN or position as salesman with a large stove and heater business, store or foundry, by a practical man; also practical experience on bidding and setting up of all kinds of heater work; a position to travel or position in store, foundry or office; fully able to bid on all kinds of stove and heater work. "Stove Salesman," care *The Metal Worker*, New York. Apr. 19

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- ☐ Architect
- ☐ Contractor and Builder
- ☐ Sign Painter
- ☐ Letterer
- ☐ Analytical Chemist
- ☐ Mechanical Engineer
- ☐ Machine Designer
- ☐ Mechanical Draftsman
- ☐ Foreman Machinist
- ☐ Foreman Toolmaker
- ☐ Foreman Patternmak'r
- ☐ Foreman Blacksmith
- ☐ Foreman Molder
- ☐ Gas Engineer
- ☐ Refrigeration Engineer
- ☐ Traction Engineer
- ☐ Electrical Engineer
- ☐ Elec. Machine Designer
- ☐ Electrician
- ☐ Wireman
- ☐ Dynamo Tender
- ☐ Motorman
- ☐ Steam Engineer
- ☐ Civil Engineer
- ☐ Hydraulic Engineer
- ☐ Municipal Engineer
- ☐ Bridge Engineer
- ☐ Railroad Engineer
- ☐ Surveyor
- ☐ Bookkeeper
- ☐ Stenographer
- ☐ Teacher
- ☐ To Speak French
- ☐ To Speak German
- ☐ To Speak Spanish

I am at present employed as ____________

Age ____________

Name ____________

St. & No. ____________

City ____________

State ____________

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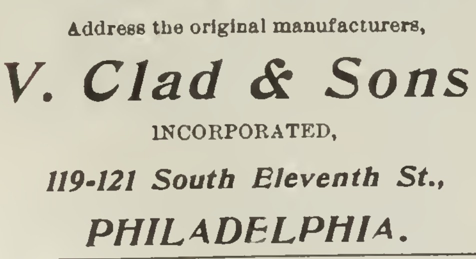

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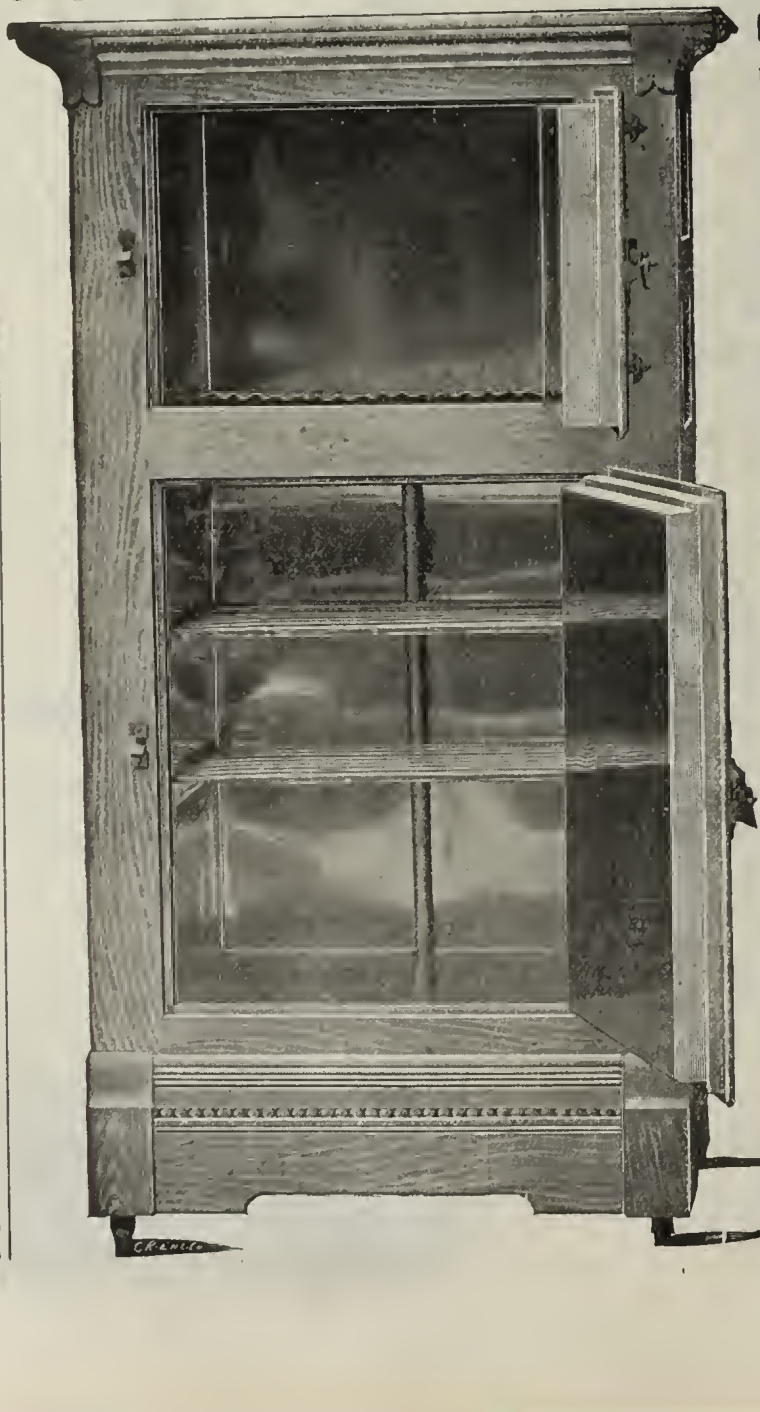

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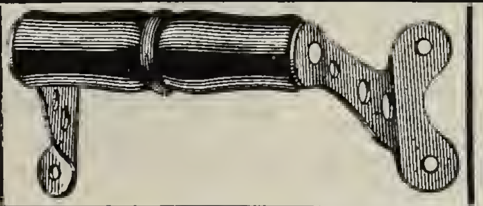
THE HIGHEST IN QUALITY.		WRITE FOR PRICE.
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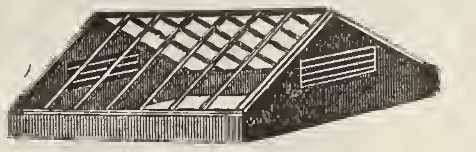

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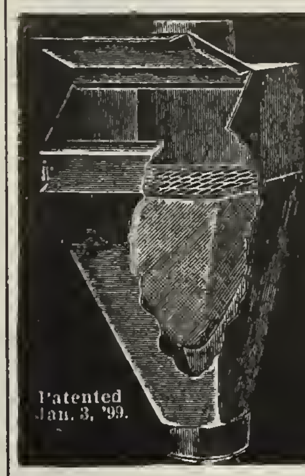
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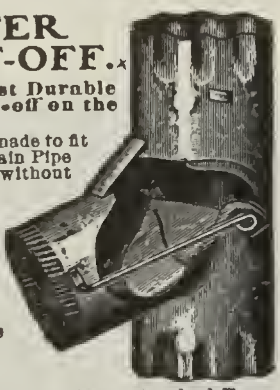

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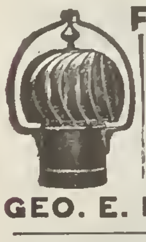

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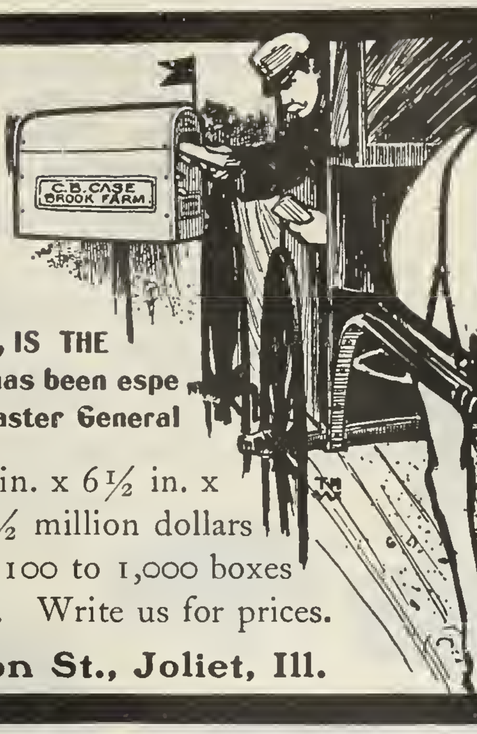

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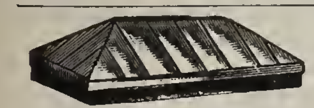

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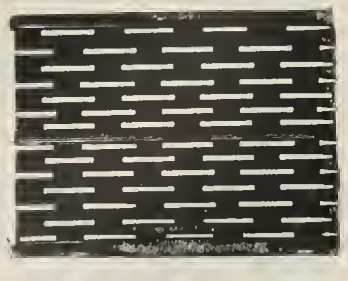

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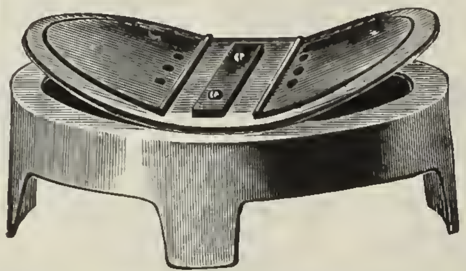

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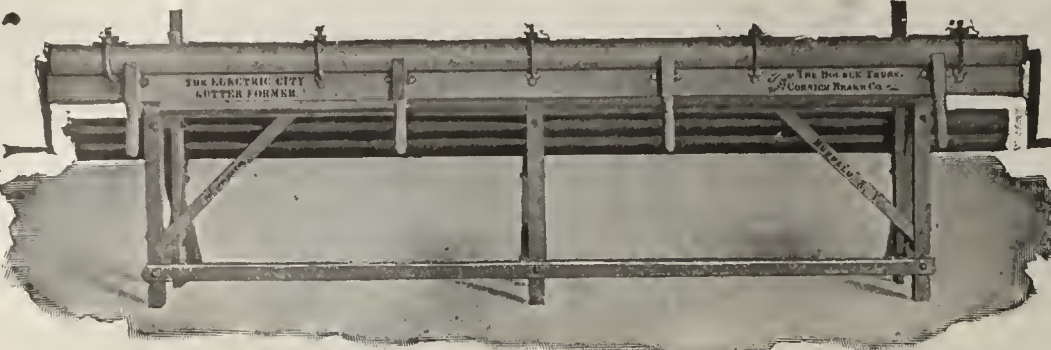
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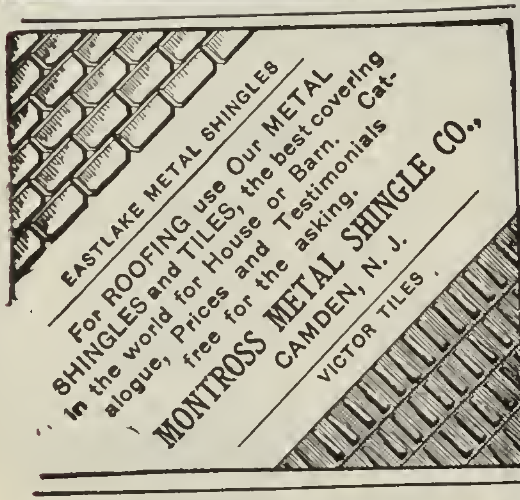
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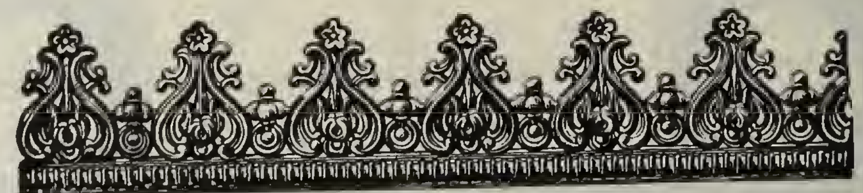

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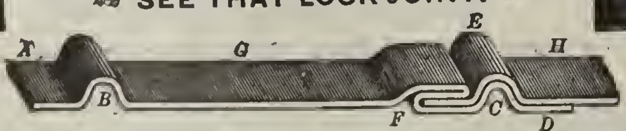

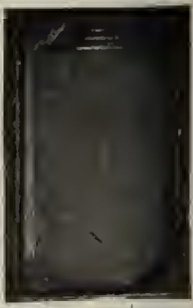

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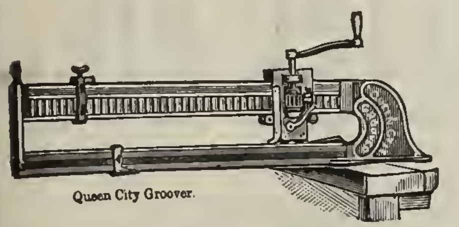

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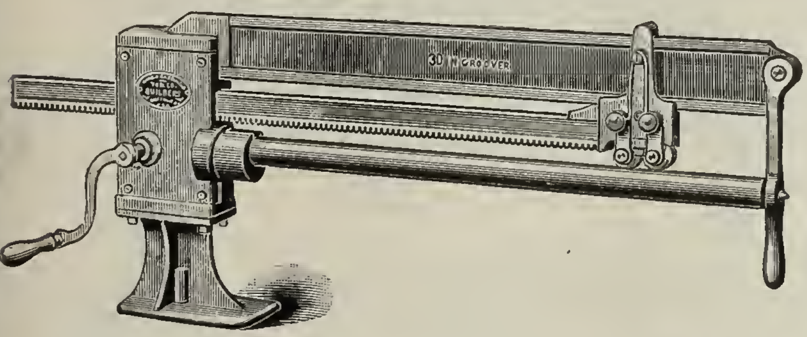

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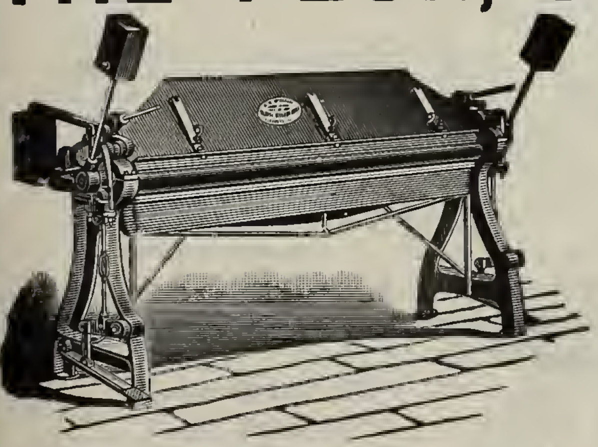

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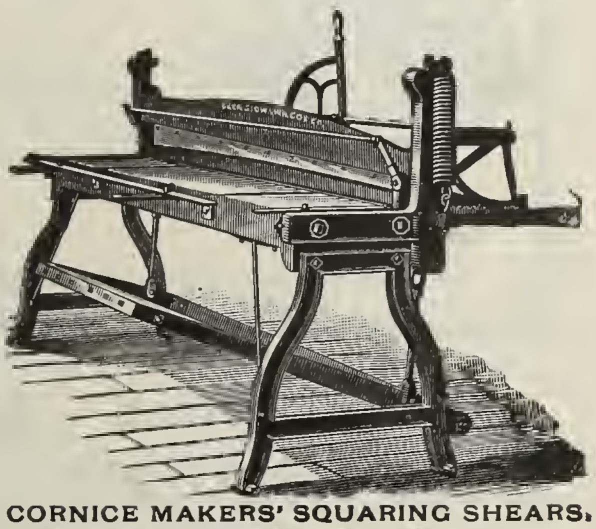

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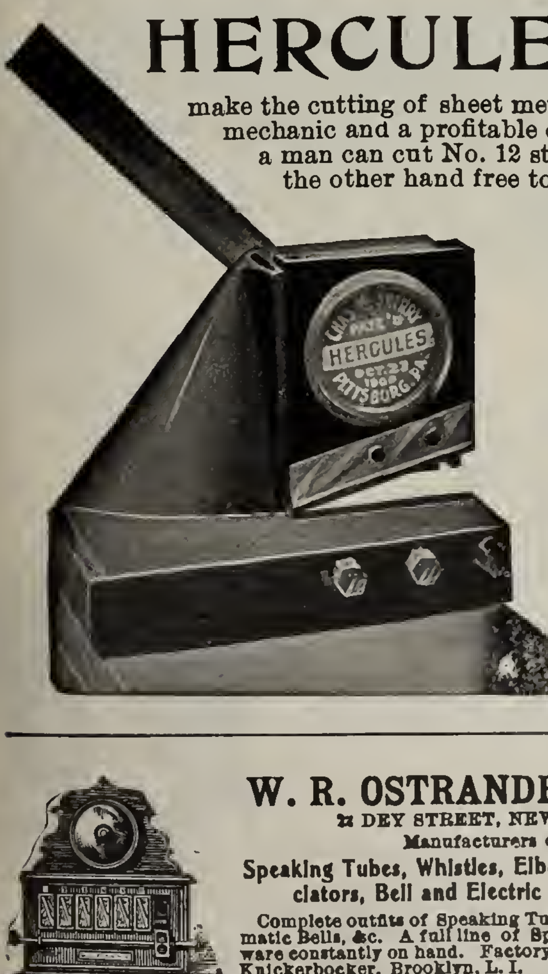

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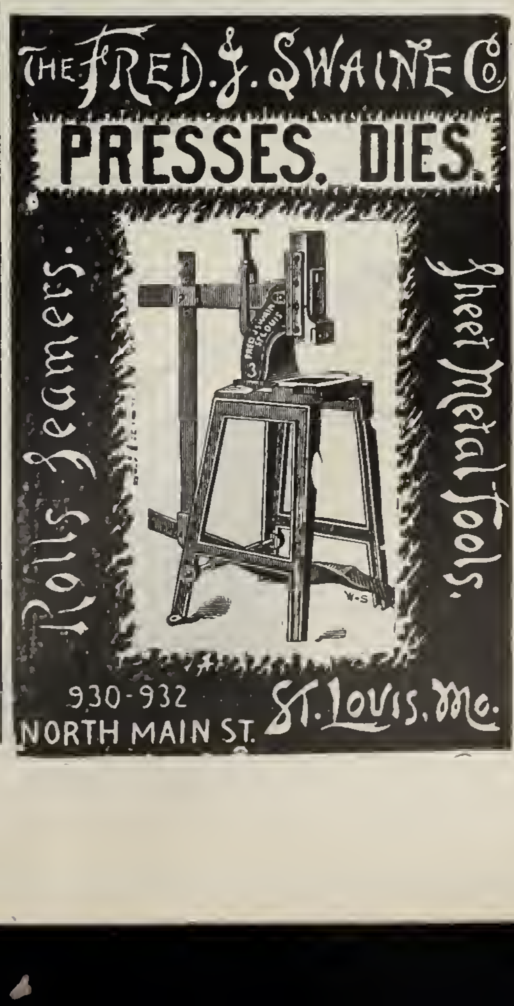

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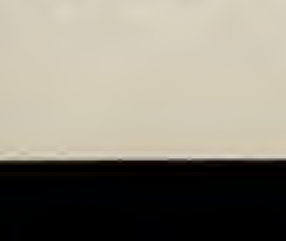

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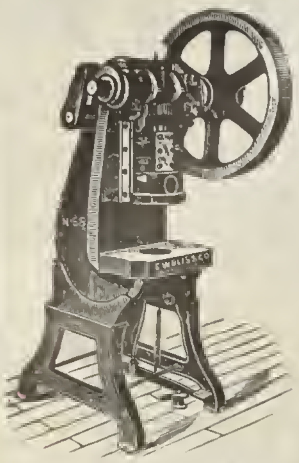

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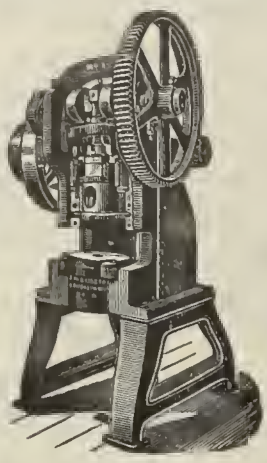

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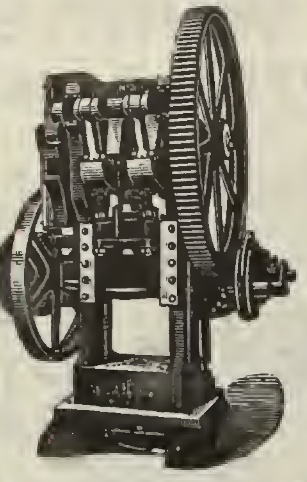

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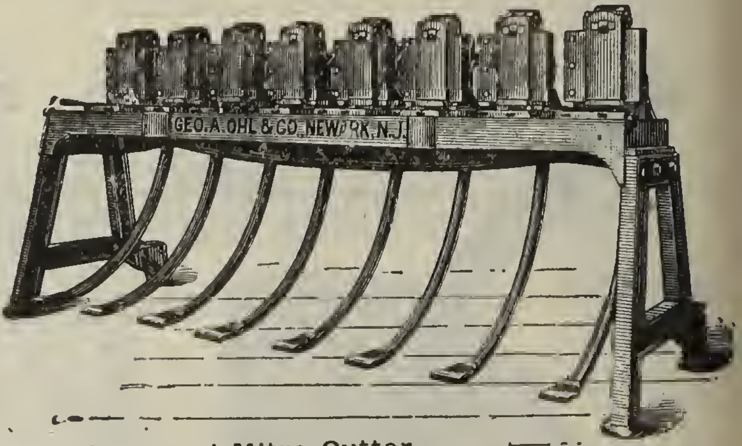
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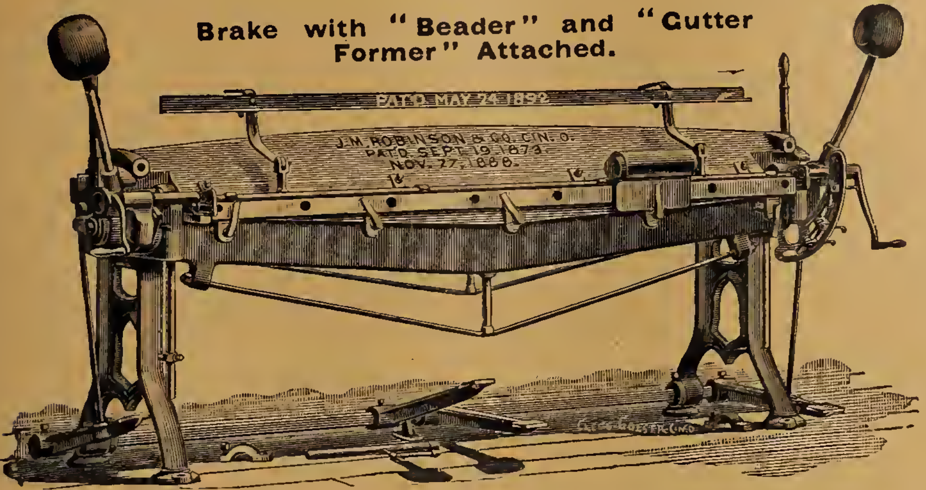
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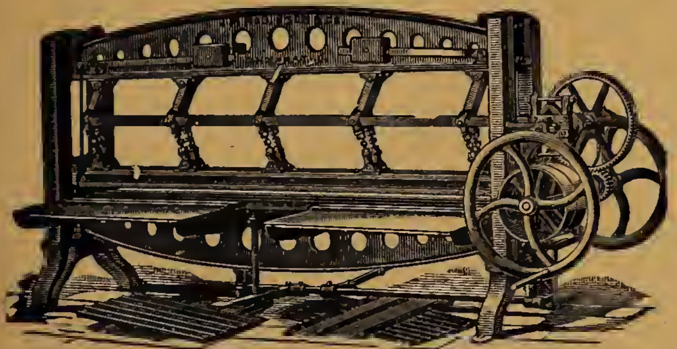

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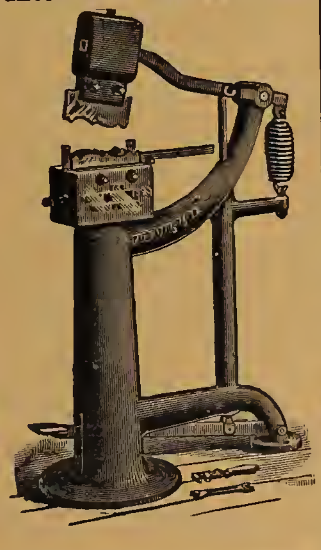

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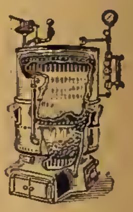

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when figuring on a hot water or steam job. Put in a boiler that you know will be certain to do the work. **Paragon Boilers** are the result of more than 40 years' experience in the heating business. The ratings are absolutely correct, the boiler is built right, and the price is right. Send for catalog and discounts to the trade.
ISAAC A. SHEPPARD & CO.,
NEW YORK. PHILADELPHIA. BALTIMORE.

OLLO BEST BLOOM
GALVANIZED IRON

me work almost re
es Apollo Any iron
do for rough work.
there any advantage
sing inferior iron ?

an Sheet Steel Company, New York

am Specialties.
and NOISELESS BACK
TOR VALVES, PRESSURE VALVES
TRAPS, PUMP GOVERNORS,
AND WATER STEAM and OIL SEP
ING VALVES, ARATORS
TEMPERATURE CONTROLLER and
No. 1 DAMPER REGULATORS
KIELEY AND MUELLER
W. 13th St., - NEW YORK.

The highest grade of Cooking Apparatus is found in
Stewart Stoves
They require fewer repairs, and, therefore, you receive fewer kicks.
FULLER & WARREN CO., Troy, N. Y.
This Ad. changes every week.

NOTICE.
Silver, Nickel Platers and Brass Goods Mfrs.
MATERIAL FOR DRYING PURPOSES.
Write for prices to John Sommer's Son, 355-365 Central Ave., Newark, N. J.

CROSBY SPRING-SEAT
GLOBE and ANGLE VALVES, IRON and BRASS.
All working parts renewable without taking the valve from piping. All parts interchangeable. Guaranteed not to leak at high pressure. Send for circular.
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JENKINS IMPROVED AUTOMATIC AIR VALVES.

Suitable for high or low pressure. Take no more room than an ordinary air cock. Endorsed by the leading steam experts as the best made and the quickest working. All genuine stamped with our Trade Mark.
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328-330-332 Second Ave.,
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Galvanized and Black Sheets.
Sheet Copper, Conductor, Eave Trough.

Our sales of
Follansbee Pure Iron Old Style
increasing wonderfully; it
is Iron Base, not steel.
Makers Scott's Extra Coated
and other Tin Plates.

Philadelphia, 133 Arch Street.
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READ OUR "AD"
Page 13.
MAGEE FURNACE CO.,
Boston

ROUND OAK
STANDARD of AMERICA

In our entire country there is no furnace that equals the

Round Oak

in air and gas tight fitting, heating capacity, durability and economy of fuel.

If you are ready to handle the best furnace made we shall be greatly pleased to have the opportunity to prove every claim we make.

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Makers of Good Goods only

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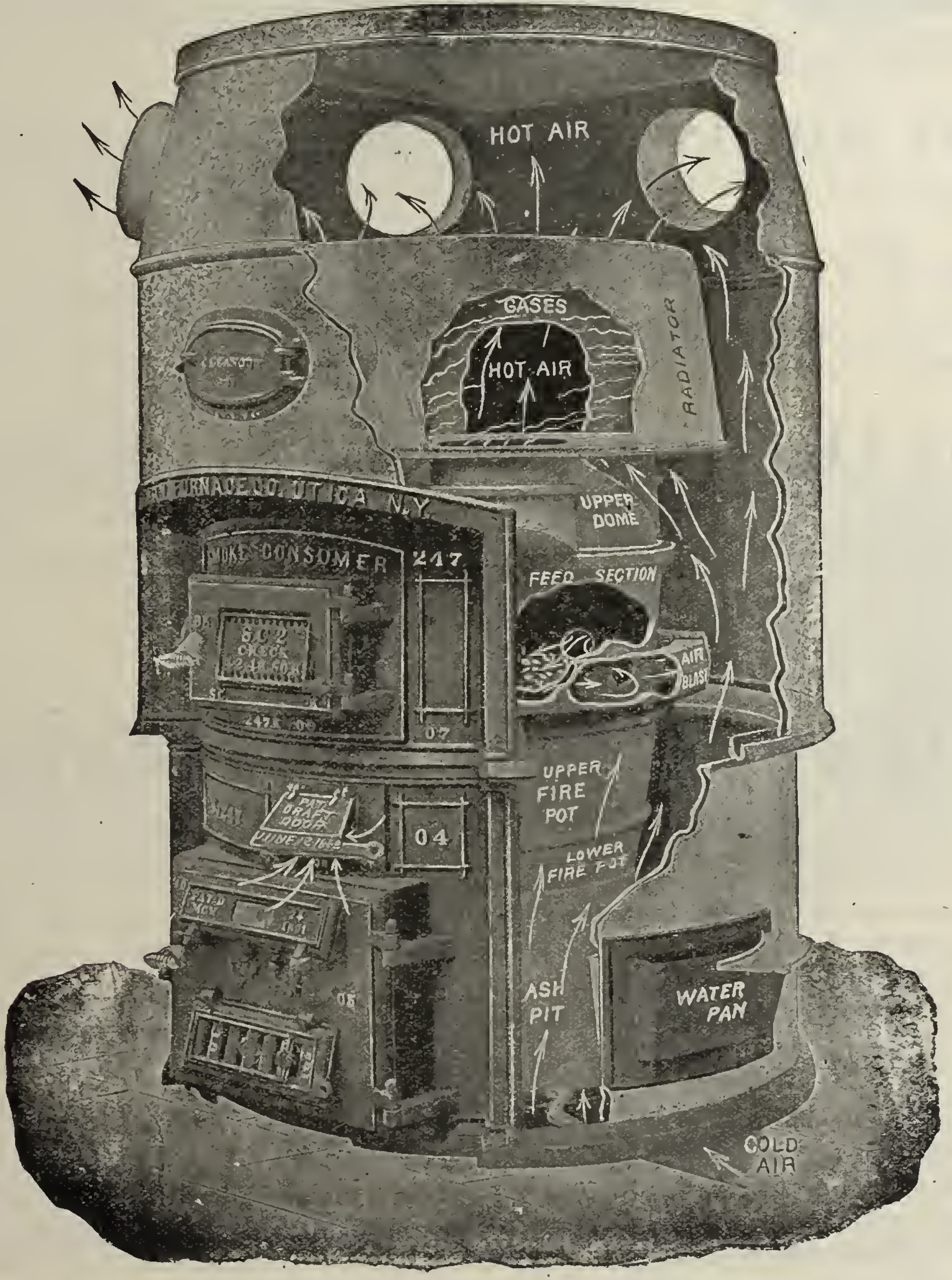
Seven-eighths of our vital energies are non-productive. In the average Furnace the use of SOFT COAL is attended by nearly as great a waste. Life and Soft Coal go up in smoke.

The KERNAN SMOKE CONSUMER

"200" SERIES, BURNS THE SMOKE.



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All Cast—Extra Durable—Scientific. Ask Us About It.

CATALOGUE OF OUR ACETYLENE GAS MACHINE WILL INTEREST YOU.

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BOSTON. NEW YORK. CHICAGO. DENVER.

LARGEST MAKERS OF HEATING AND LIGHTING APPARATUS IN THE WORLD.

First Prize, Paris, 1900

TO OUR C

GARLAND Stoves and R

Have been so extensively advertised in the
they have become household words throu
United States.

Vast Sums of Money have been expended in n
and general advertising in establishing their reputation.

The Policy of the Future will be more aggress
that of the past. We exp
the current year to maintain a vigorous advertising campaign and spar
or expense to keep our goods before the eyes and minds of the peop

This Department of Our Business wil
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the direction of a practical and experienced advertiser, well able to m
tain the prestige established. Suggestions will be gladly received
appreciated

We Present Herewith the

“New Staple Garland,”

Six-Hole Steel Range, for Soft Coal or Wood,

And offer it to our patrons as a thoroughly-good construction, to meet the popula
mand, possessing all the desirable features and embracing special points of merit
in no others. Smooth polished steel used in its construction. It is excellent val
the price asked.

Made for Hard Coal or Wood,
Under the Name of ❦ ❦ ❦ **“Savoy Garland.”**

The demand for Steel Ranges and Steel Cooks has become so great that the m
is flooded with a various lot, some good, some not so good and some so bad as
hardly worth the name.

We are offering a Standard Grade in a more complete line than ever, and ask
you kindly investigate and order samples before placing your general orders.

All Styles and Sizes for Every Kind of Fuel.

The Genuine all bear this Trade-Mark. Beware of Imitations.

GARLAND STOVES AND RANGES
“The World's Best”

The Michigan

Largest Makers of Stov

DETROIT. **CH**

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GARLAND STOVES AND RANGES The World's Best
THE MICHIGAN STOVE CO DETROIT CHICAGO

PAN-AMERICAN EXPOSITION
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First Prize, Buffalo, 1901

All Styles and Sizes for Every Kind of Fuel.

The Genuine all bear this Trade-Mark. Beware of Imitations.

GARLAND STOVES AND RANGES
"The World's Best"

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GO. BUFFALO.

Cinderella

Steel Ranges

REPRESENT

The Best Materials,

The Best Construction,

The Best Workmanship.

THEY ARE

The American Standard for Excellence.

ALL STYLES AND SIZES AT MODERATE PRICES.

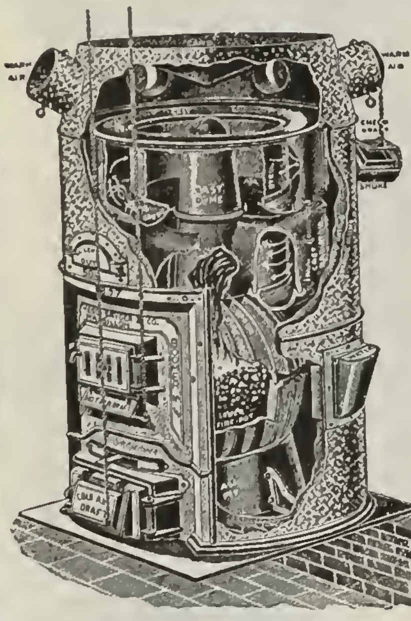
We would be pleased to send our catalogue.

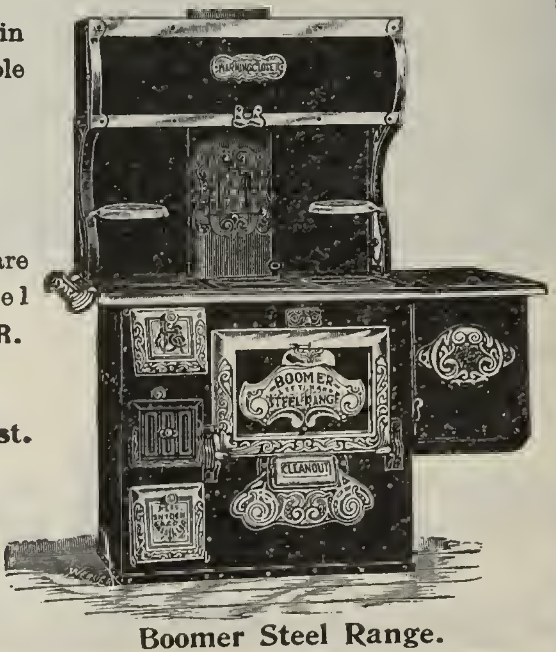
PITTSBURGH STOVE & RANGE CO.,
PITTSBURGH, PA.

WESTERN SALES AGENT,
W. D. Sager, 38 and 40 Michigan St., Chicago, Ill.

STOVES AND RANGES CINDERELLA NEVER FAIL

STOVES AND RANGES CINDERELLA NEVER FAIL





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Boomer Furnaces.

OR

Boomer Steel Ranges

We want to state in strongest terms possible that if you want the **HEAVIEST, MOST DURABLE, MOST ECONOMICAL** and easiest to take care of Furnace or Steel Range, buy a **BOOMER.**

Boomer Furnace.

Neither time nor money is spared to make them the Best.
Buy Boomers and save your coal bills.
We invite investigation.

Boomer Steel Range.

THE HESS-SNYDER CO.,
Manufacturers, MASSILLON, O.

STAR STOVES AND RANGES
ENTERPRISE STOVE CO. VINCENNES, IND.
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OUR
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GAS RANGES
CAST RANGES
STEEL RANGES
STEEL COOKS
HOT PLATES
CAST and STEEL
HEATERS

WILL BE FURNISHED FOR THE ASKING BY
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REFRIGERATORS,
BLUE FLAME OIL STOVES,
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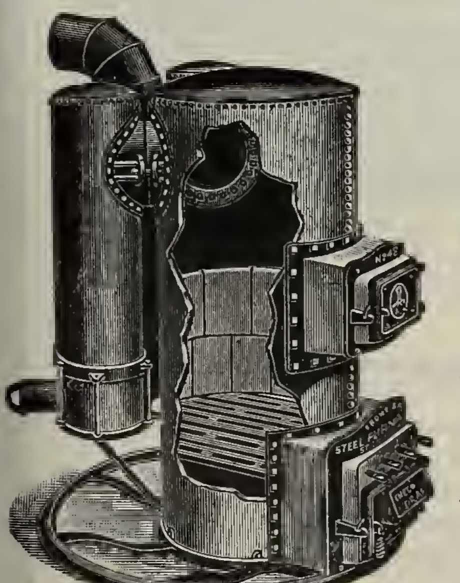
LARGEST JOBBERS
in
NEW ENGLAND.

GAS RANGES,
FURNACES, STOVES,
RANGES AND REPAIRS.

HENRY N. CLARK CO., 56 and 58 UNION ST., **Boston, Mass.**

BRAND STOVE CO.

STOVES, RANGES and
FURNACES.
SEND FOR CATALOG.
MILWAUKEE, WIS.



Front Rank Hot Air Furnaces
are built on vertical lines; air comes in direct contact with entire heating surface.

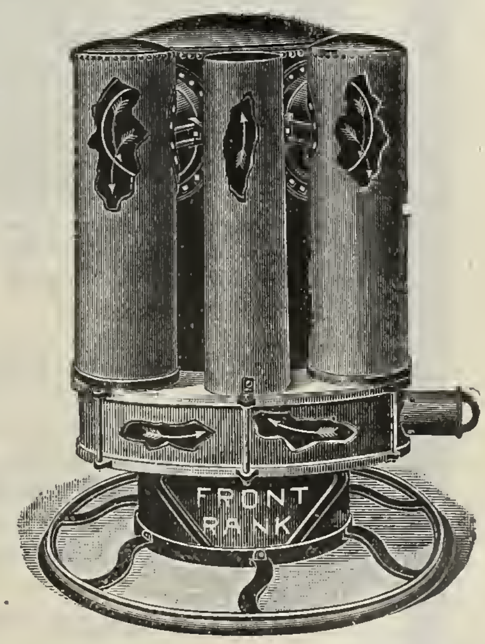
The Front Rank Fire Chamber is one solid sheet of closely riveted steel; being lined above the fire lines with genuine fire clay tiling it is the most durable made.

The radiators are very large and have an unusual area of heating surface in comparison with the size of fire pot.

These furnaces burn hard or soft coal or coke. We also make wood burning furnaces.

Send for our catalogue, it will give you a better idea of what we make.

FRONT RANK STEEL FURNACE CO.,
2301 to 2309 Lucas Ave., St. Louis, Mo.



THE HAXTUN
DEFENDER
GREAT NORTHERN
The SUPERIOR
TABASCO

DON'T
look any further if in search of boilers for steam heat or hot water. The list opposite contains the standards. Send for catalog and get acquainted with them.

KEWANEE BOILER COMPANY
KEWANEE, ILLINOIS.

Moore's QUICK OVEN Stoves

HUSTLES HIM TO WASH HIS FACE

Mr. B. J. Norby of Cassville, Mo., writes as follows:

> "One of the Steel Stoves recently ordered was for Editor Charles Ray. He is very much pleased with it. Mrs. Ray thinks that there is no other worth having. She says it bakes so quickly that her husband hardly has time to wash his face before breakfast is ready."

The kind of satisfaction shown in this letter is the kind that counts big for future business. It reaches the neighbors and friends, and in the end makes many sales.

MOORE'S QUICK OVEN STEEL STOVES give this kind of satisfaction in abundance. That's what makes them

"The Easy Line to Sell."

Joliet Stove Works, Joliet, Illinois

HOLBROOK, MERRILL & STETSON, San Francisco, Sacramento, Los Angeles.

Don't Worry

Or sit up nights trying to solve your Heating problems. We've run against many kinks and snarls in our 53 years' experience in the designing and installation of

Heating Apparatus

And know what to avoid

We are in a position to give competent advice and assistance in the preparation of plans for heating and ventilating apparatus.

In consulting with us you assume no obligation.

Write us what you desire to accomplish

THE BOYNTON FURNACE CO.

New York **Chicago**

"Where ignorance is bliss 'tis folly to be wise"

is a good maxim for him who has lost golden opportunities — and doesn't know it — but is ignorance ever bliss?

Those who have been shrewd enough to use

RICHMOND

Heaters that HEAT

BOILERS

Know it's not folly to be wise.

By a little investigation and a few comparisons you will discover that what we have taken the liberty of calling wisdom was after all only common sense.

Why not let us tell you more about Richmond Boilers?

RICHMOND STOVE COMPANY

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Philadelphia, 18-24 So. 7th Street
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With or
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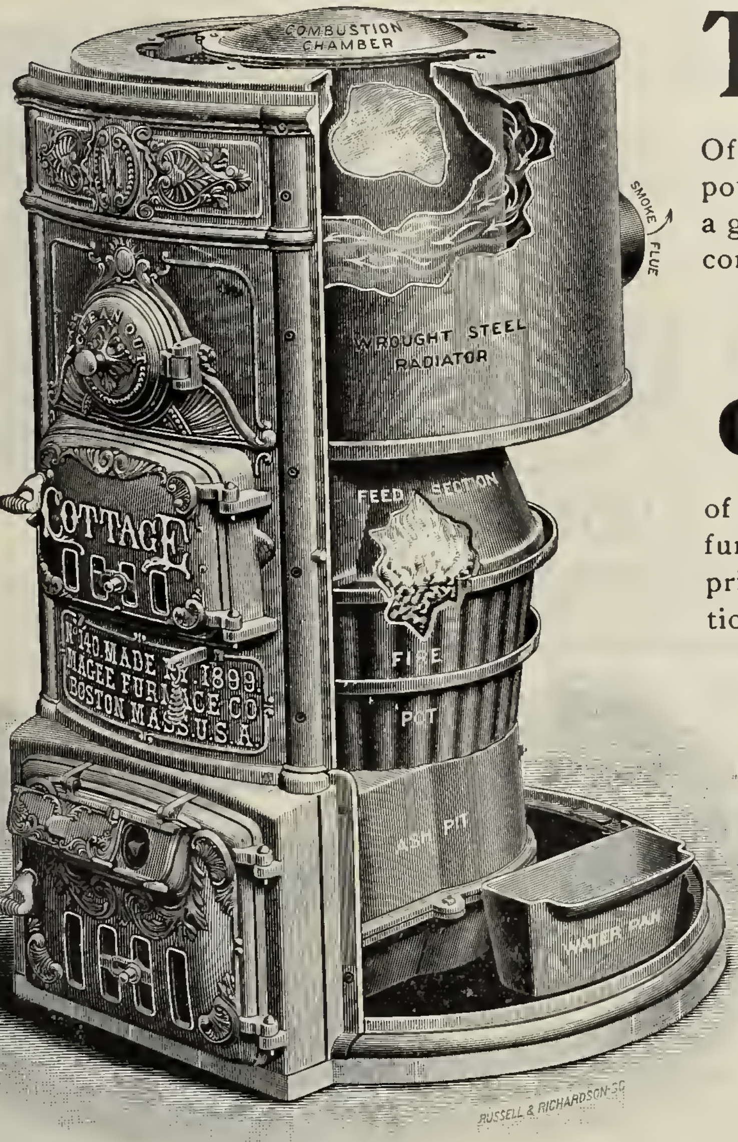
Casings.
6 Sizes.
Capacities
6,000
to
40,000
Cubic
Feet.



The Best Test

Of a furnace, with reference to its heating power, is the amount of space it will heat with a given amount of fuel under a proper state of combustion. We make the distinct claim for our

Magee Cottage Furnace

of superiority in this respect over any and all furnaces where a high grade furnace at a low price is desired. It is not offered in competition with inferior grades, designed especially for the cheapest class of work, but is a construction from which the greatest amount of heat can be obtained from the least amount of fuel, and at the same time add to your reputation.

Send for Catalogue.

Magee Furnace Co.,
BOSTON.

WESTERN AGENCY,
J. D. Lott & Co., 86 Lake St., Chicago, Ill.

Most complete line under one name in the United States.

FURNACES **EXCELSIOR HEATING SPECIALTIES** **PIPE**

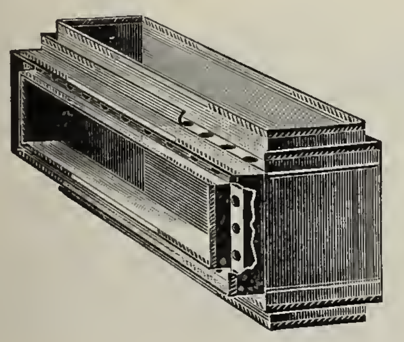
WE ARE MAKING

Very Low Prices

on our full line for present and future deliveries and solicit

Your Inquiries

Our Stove Pipe and Elbows, also Furnace Pipe are the Best made.



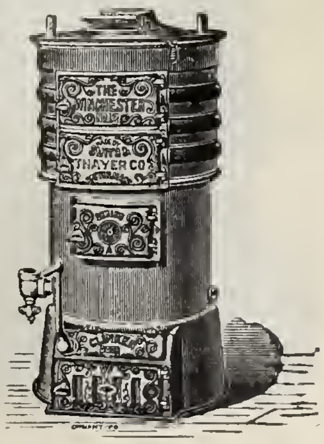
THE EXCELSIOR PARLOR ELBOW.

ELBOWS **EXCELSIOR STEEL FURNACE CO.** **REGISTERS**
38-40 W. MONROE ST.-CHICAGO.

WINCHESTER

Familiarize yourself with the name "WINCHESTER." No other heater before Adam or since has had so many good features or so few poor ones. No one ever shifts from a "WINCHESTER" steam or water heater. Address SMITH & THAYER COMPANY, Boston, Mass., 106 Beekman St., New York, for prices.

HEATER.



Royal Heaters.

HART & CROUSE CO.,

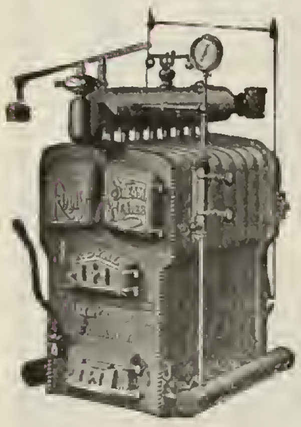
235 Water St.,
New York.

78 Lafayette St.,
UTICA, N. Y.

79 Lake St.,
Chicago.

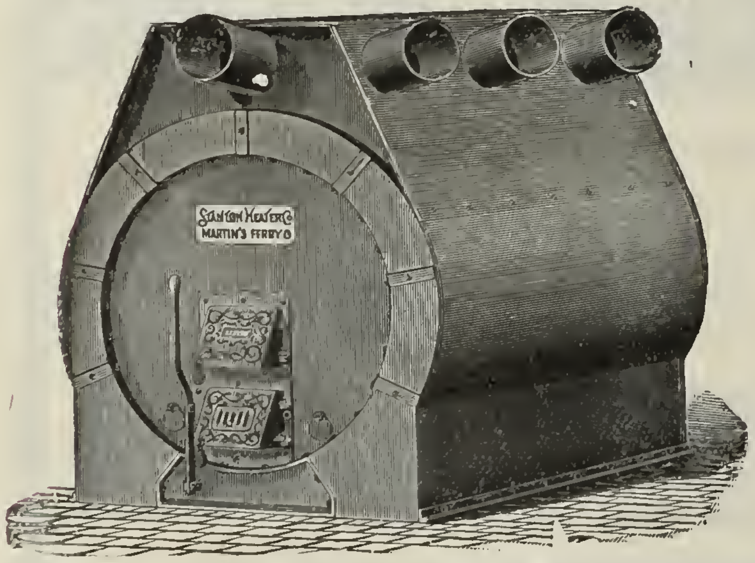
The Leading Line of Heating Apparatus.

HOT WATER,
STEAM,
HOT AIR.



The Stanton Seamless Heater,

PORTABLE CASED.


Stanton Heater Co.
MARTIN'S FERRY O.

CADIZ, OHIO, June 18th, 1900.

GENTLEMEN:—We had a Stanton Furnace No. 84 put in last Fall and have nothing but praise to say of it. The space heated is 50,400 cubic feet, which it keeps comfortable in the coldest weather. Our fuel costs only one-fourth what it used to and besides is perfectly clean. We take pleasure in recommending it. Respectfully,

J. EHRHART, Hotel Ehrhart.

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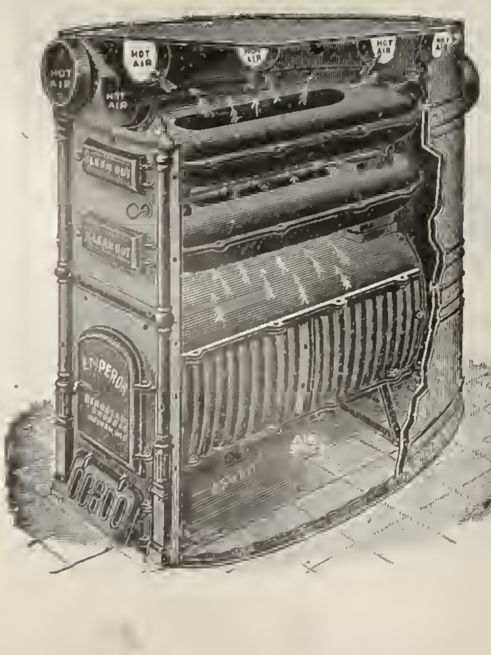
THE STANTON HEATER CO.,
Martin's Ferry, Ohio.

See Our Advertisement Next Week.



Emperor Furnaces

FOR WOOD.

Simple, Safe, Durable. Economical in Fuel.

The Best and Cheapest Line of Wood Furnaces. . . .
Furnished for either Brick or Galvanized Iron Ca·ing

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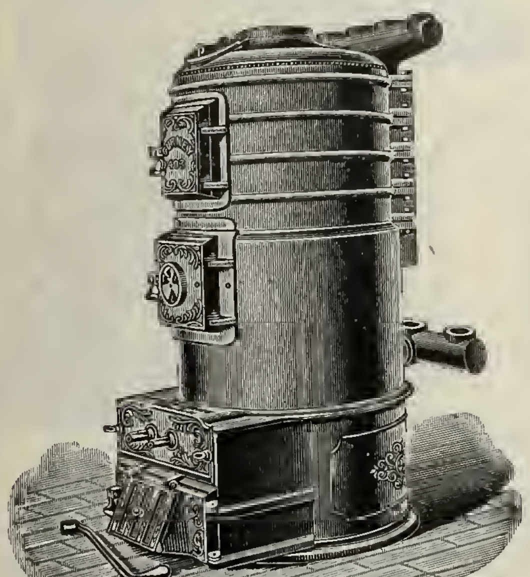
Bergstrom Bros. Co.

NEENAH, WIS.



Never Over-Rated. . . . .

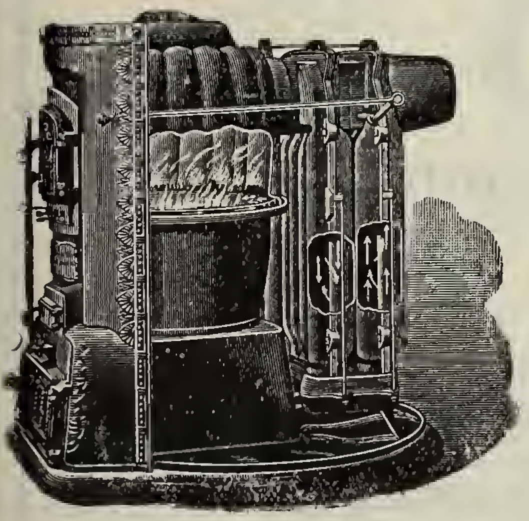
GURNEY HEATERS are never over-rated, neither in the estimation of the public nor in our claims for them. They will do exactly the work we say they will do. We declare that **GURNEY HEATERS** have no equal for efficiency, durability and economy. On account of the excellence of their construction they will maintain temperatures longer and require less fuel.

Do you not wish to handle the best? Write us for catalogues, etc.

GURNEY HEATER MFG. CO.,

74 Franklin St., Boston. **111 Fifth Ave., New York City.**

Western Selling Agents, James B. Clow & Sons, Franklin
and Harrison Sts., Chicago, Ill.



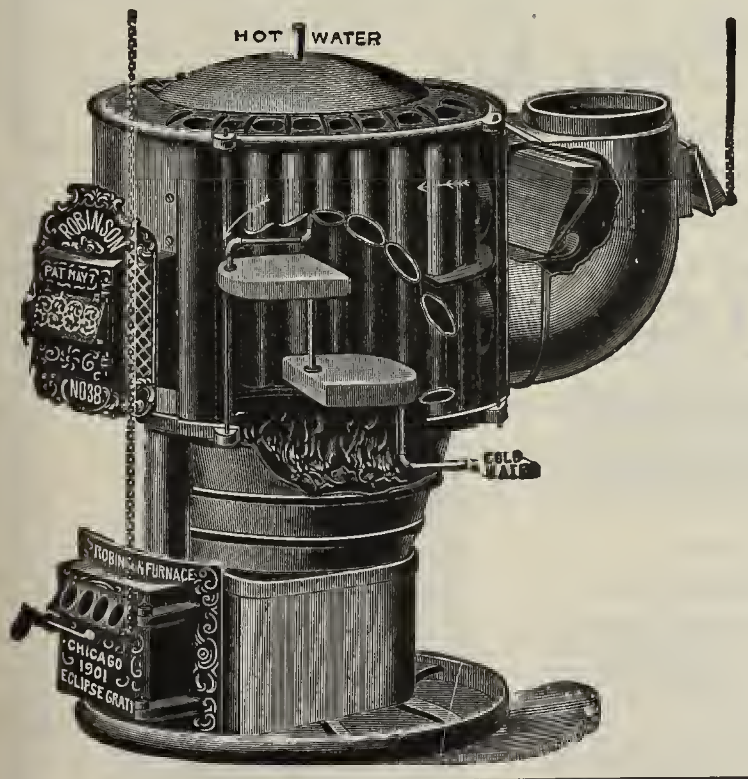
Bengal Furnace

It is totally unlike any other,—a brand new idea in the radiation of hot air. The BENGAL is bound to supersede the old style drum furnace as surely as electric light has gas. And the sooner you investigate the matter the better for your business. Full particulars on application.

EASTERN SELLING AGENTS:
GURNEY & CO.,
Washington, Hanover and Elm Streets, Boston, Mass.

FLOYD, WELLS & CO., Royersford, Pa.

NEW YORK OFFICE, 210 WATER ST., R. W. HILLMAN, Manager.



The Robinson Tubular Warm Air Furnaces

give universal satisfaction whereever used.

They are up-to-date in every respect and have many special features not found in other furnaces.

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ROBINSON FURNACE CO., Chicago.

STOVE REPAIRS

Bought from us entitle the purchaser to a 1000 mile book *Free*, on any railroad. Have you received one of them?

CHAS. C. HEATH & CO., Philadelphia and Baltimore. Write us for particulars.

We Do Not Make Cheap Furnaces

BUT WE DO MAKE

GOOD FURNACES

CHEAP.

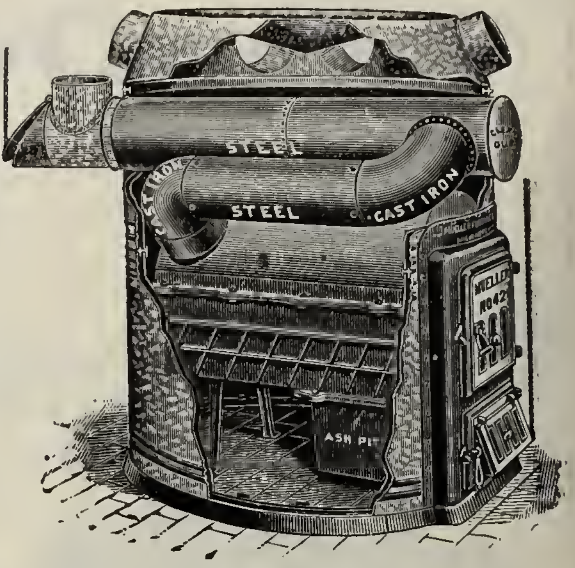
NONE EQUAL TO

"MUELLER."

MADE FOR ALL KINDS OF FUEL.

Write for Catalogue and Prices.

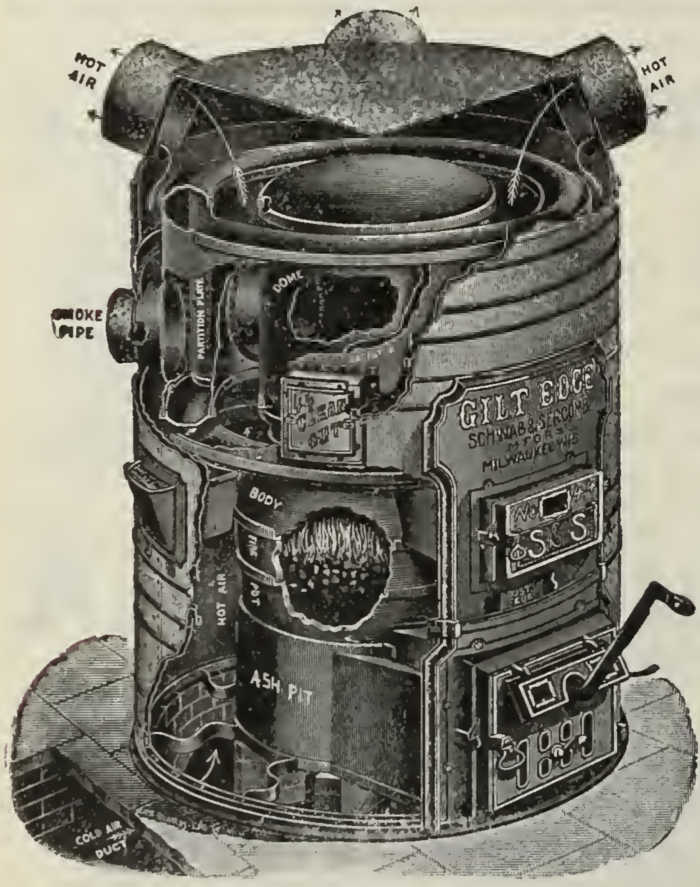
EVERYTHING IN THE HEATING LINE.



Established 1857.

L. J. MUELLER FURNACE CO.,

190 REED ST, MILWAUKEE, WIS.



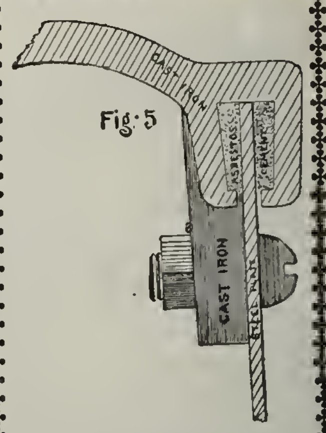
Gilt Edge Warm Air and Combination Heaters

have merits that are all their own. They are made in a large variety of styles and sizes, each adapted especially to a certain class of fuel. Our line is "gilt edge" in every sense of the word. Every furnace we make is correctly made in accordance with right principles, and the price is right. Kindly write us for catalogue.

R. J. Schwab & Sons Co.,

Milwaukee, Wis.

Fig. 5



Patented.

The Keystone Joint used on Gilt Edge Furnaces is the only permanent gas-tight steel and cast iron joint on the market.

WHAT WE CLAIM.

"52 Years of Success"

A construction from which the greatest possible amount of fresh warm air can be obtained with the least amount of fuel. . . . .

A PLEASED BUYER SAYS:

"I have used *twenty-five of your furnaces* in new houses I have built, and I shall continue to use them in preference to all other furnaces I have tried, and I have tried many kinds. They give the best of satisfaction in every case. I have a No. 48 Thatcher Tubular in my own house and I find it easy to run, economical, and a great heater. I cheerfully recommend it to all who wish to be warm and comfortable on a cold winter day."

M. A. NORTON, Hartford, Conn.

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The Thatcher Furnace Co., WARM AIR FURNACES, RANGES, STEAM AND HOT WATER HEATERS. **240 Water St., N. Y.**

Works: NEWARK, N. J.

THE IDEAL FITTER

Send for our new catalogue.
First edition now ready.

AMERICAN RADIATOR COMPANY

Lake and Dearborn Streets
Chicago, U. S. A.

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New York
Buffalo
Philadelphia

St. Louis
Minneapolis
Denver
London

The "HOME WINTHROP" Range bakes with *One-Third* less fuel than any other.

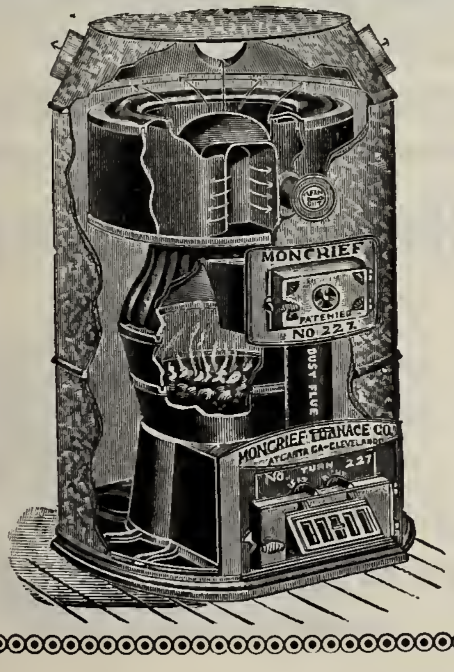
No other range has a *Dust Flue* which takes *all* the dust up the chimney, even if the draft slide is open when you shake the grate.

The "HOME WINTHROP" bakes as well late in the afternoon with an old fire as other ranges do in the morning with a new fire.

While other good ranges heat only four or a part of five sides of the oven, the "HOME WINTHROP" heats *all of five sides.*

The price is from $5.00 to $8.00 less than other high-grade ranges are sold for.

DIGHTON FURNACE CO., Taunton, Mass.



MONCRIEF FURNACES

PORTABLE
and BRICK SET.

Unequalled in the Great Essentials---Simplicity, Durability, Economy, Capacity, Comfort.

NO BETTER MADE.

Write for catalogue. Special price to the trade.

MANUFACTURED BY

The MONCRIEF FURNACE & FOUNDRY COMPANY, ATLANTA, GA.

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Investigate
Our Prices.

INDEPENDENT
REGISTER CO.,
152 Champlain St., CLEVELAND, O.

HOT WATER AND HOT AIR

HEATING BY COMBINATION STOVES AND FURNACES.

Suitable for Large or Small Houses, Stores, Conservatories, Barber Shops, Hotels, etc., etc.

Heat Water Quickly.
Circulation is Positive.
No Joints Inside to Leak.

THE NATIONAL PIPE BENDING CO
160 RIVER ST., NEW HAVEN, CONN.

GLENDALE Stoves and Ranges

Manufactured by
SOMERSET STOVE FOUNDRY CO.,
SOMERSET, MASS.
Send for catalogue.

SCRANTON CORUNDUM & EMERY WHEEL CO.
1311-1315 Capouse Avenue, SCRANTON, PA.
Write for Catalogue.

OUR "BLACK DIAMOND" artificial abrasive wheels are especially adapted for **The Stove Trade** THEY ARE THE BEST.

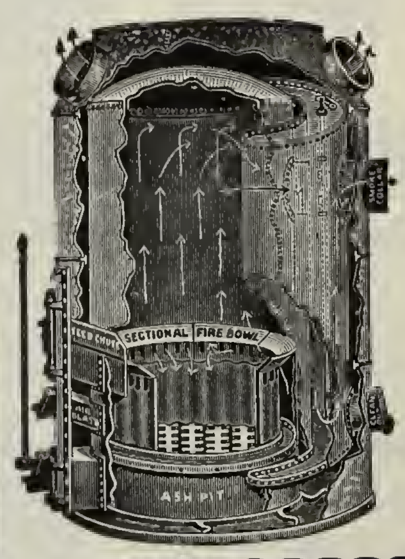
STAMFORD FOUNDRY COMPANY

MAKERS OF

RANGES COOKING AND HEATING STOVES
HOT-AIR AND COMBINATION AIR AND
WATER FURNACES
LAUNDRY STOVES CONFECTIONERS' STOVES
CABOOSE RANGES ETC ETC

STAMFORD CONN

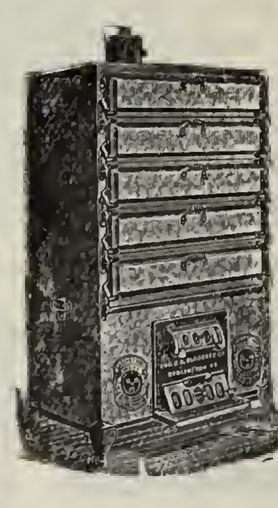
The Torrid Zone Furnace



is a trade winner because it has points of merit peculiar to itself that can be found in no other steel furnace. Our new catalogue is now ready to mail and a description of our Hot Air and Hot Water Combination Furnace can be seen in it. We furnish either the cast iron lining or the fire brick at the same price. Our Wood Furnace is called a powerful heater by those who use it.

CATALOGUE FREE.

Lennox Manufacturing Company,
Eighth Ave. and Frederick St.,
MARSHALLTOWN, IOWA.



Portable OVENS

FOR
CORE BAKING,
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ENAMELLING, Etc.

OVENS FOR Bakers, Confectioners, Hotels, Etc

Made in all sizes, single and double, for coal, wood, natural or artificial gas.

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The G. S. BLODGETT CO., Burlington, Vt., U. S. A.

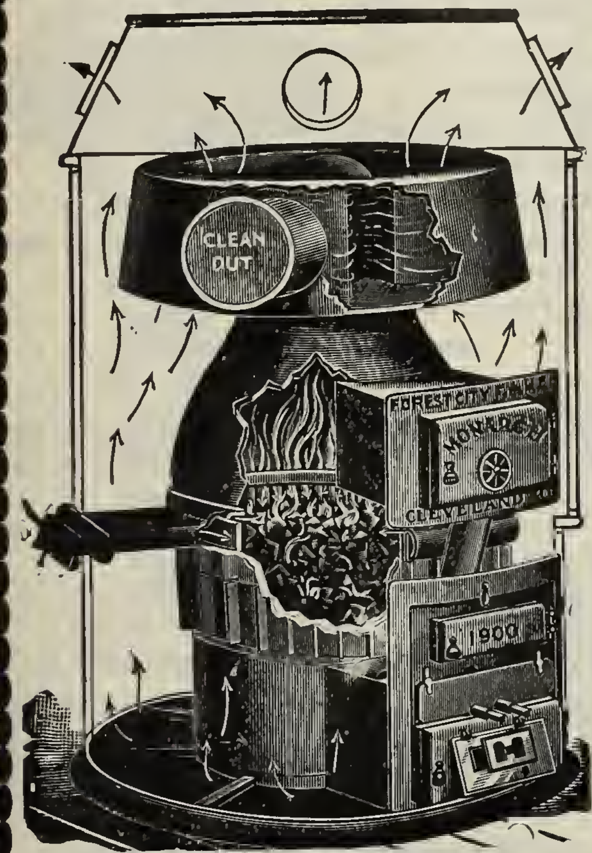
PATENTED
JULY 19, 98
BRIEN HEATER CO. HOOSICK FALLS N.Y.

Brien Heater.

A perfect, all cast WOOD or COAL burner. There is no other Hot Air Furnace as low down as the "BRIEN."

Write for territory, catalog and prices.

BRIEN HEATER CO.,
HOOSICK FALLS, N. Y.



Monarch Air Blast Furnaces.

All Cast Iron.
For Hard and Soft Coal.

Send for 1902 Catalog and discounts.

The Forest City Foundry and Mfg. Co.
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CLEVELAND, OHIO.

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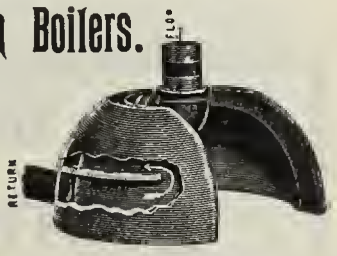

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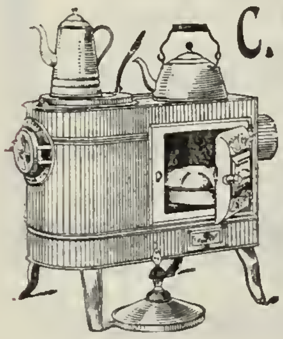

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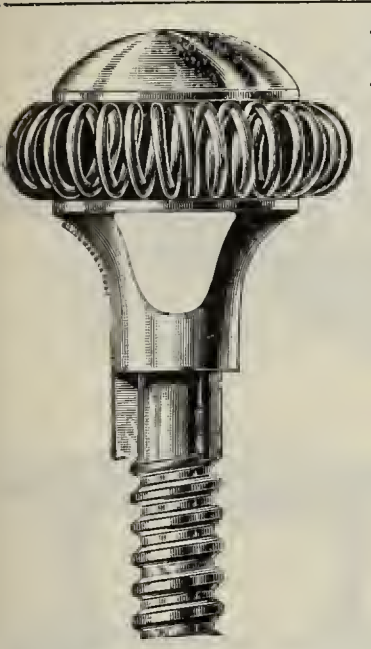

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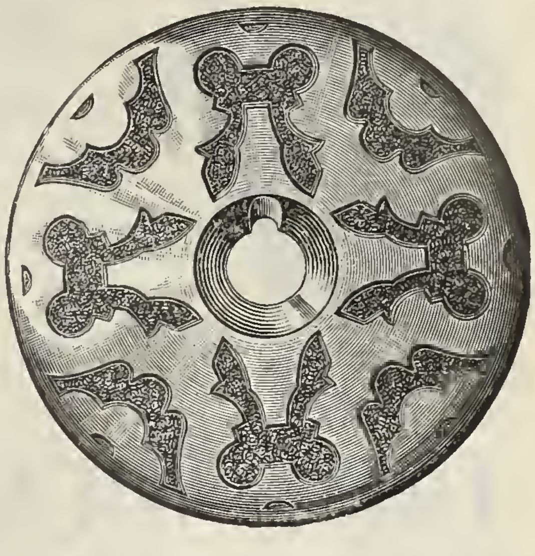

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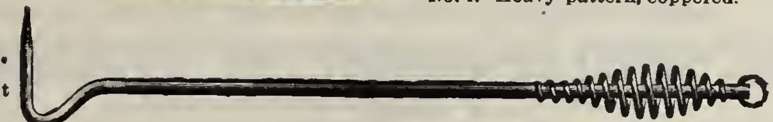

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Either bent or straight ends; length, 20 in.

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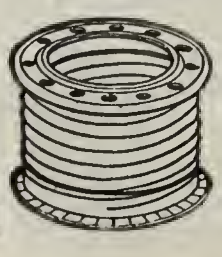

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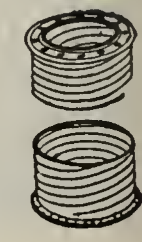

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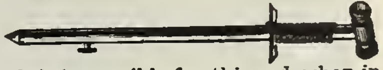

It is impossible for this rod, when in position, to move either way.

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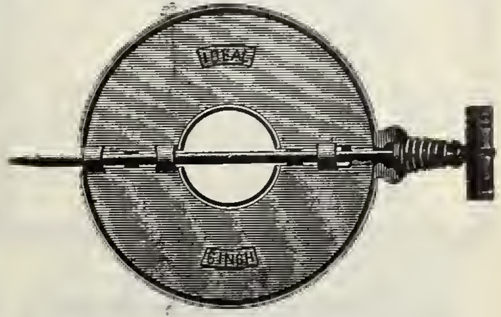

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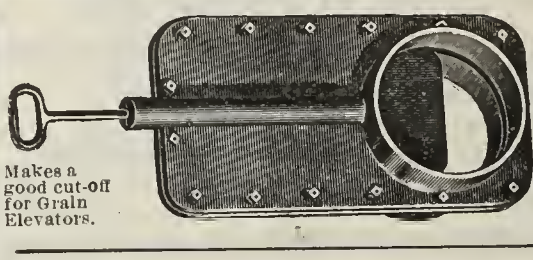

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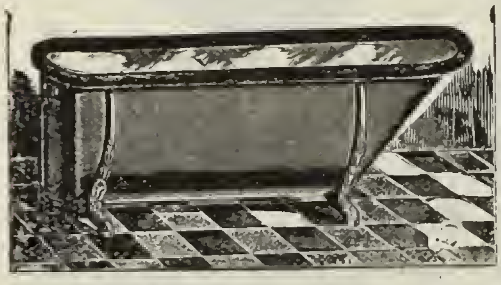

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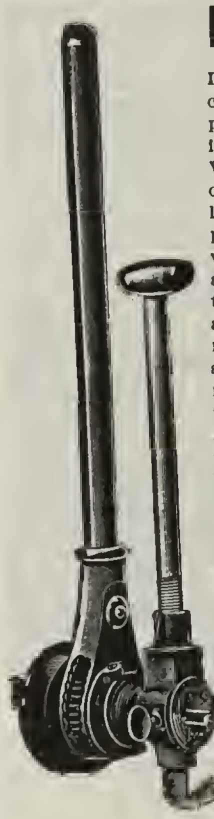

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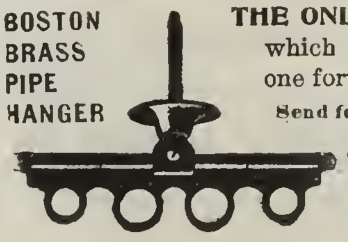

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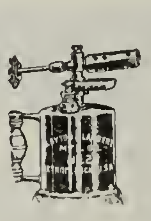

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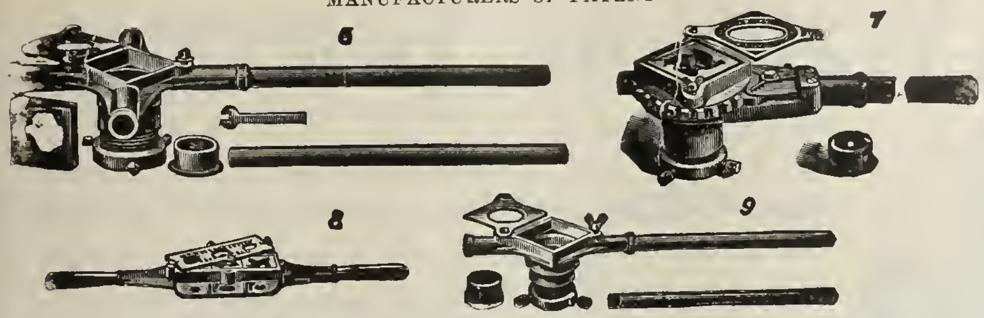

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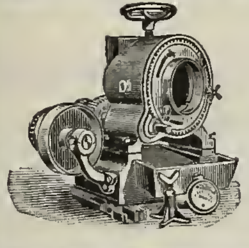

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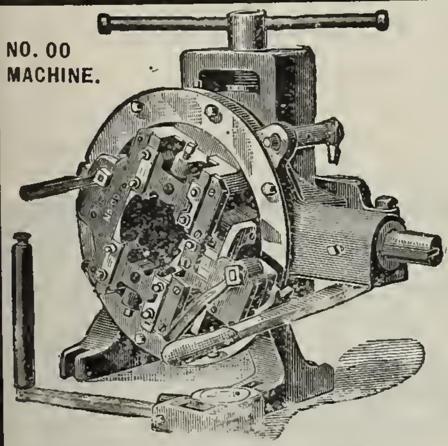

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Can interfere with the work of

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Moving parts run in oil in covered chambers. For other strong points, see catalogue.

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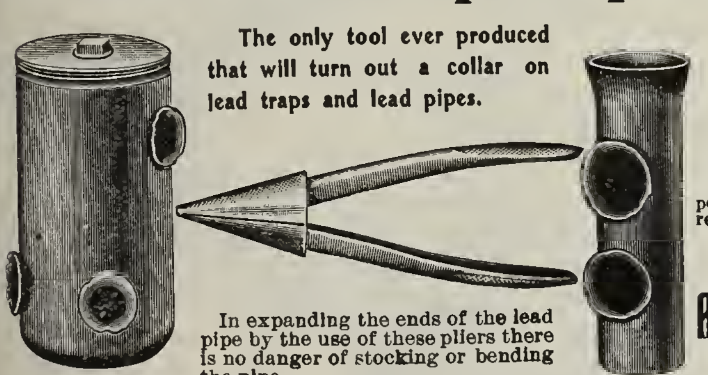
The only tool ever produced that will turn out a collar on lead traps and lead pipes.



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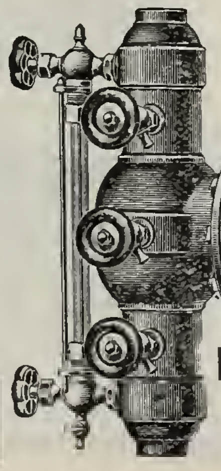

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Quantity shipments are packed in cases 6 and 12 furnaces each.

The "DURO" Plumbers' Furnace

Has Drawn Steel Reservoir
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Improved Filling Plug.
Safety Air Cock Joints.
No Cast-Iron Parts.

It weighs less than any other Furnace now in use.

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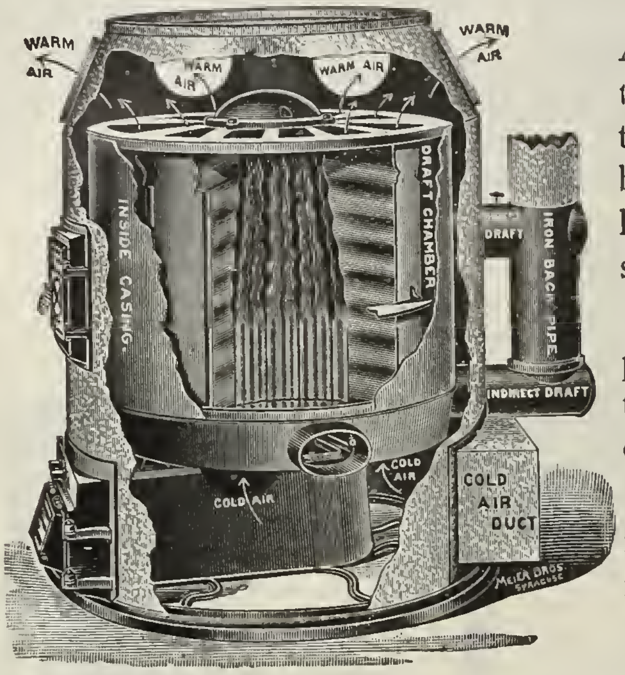

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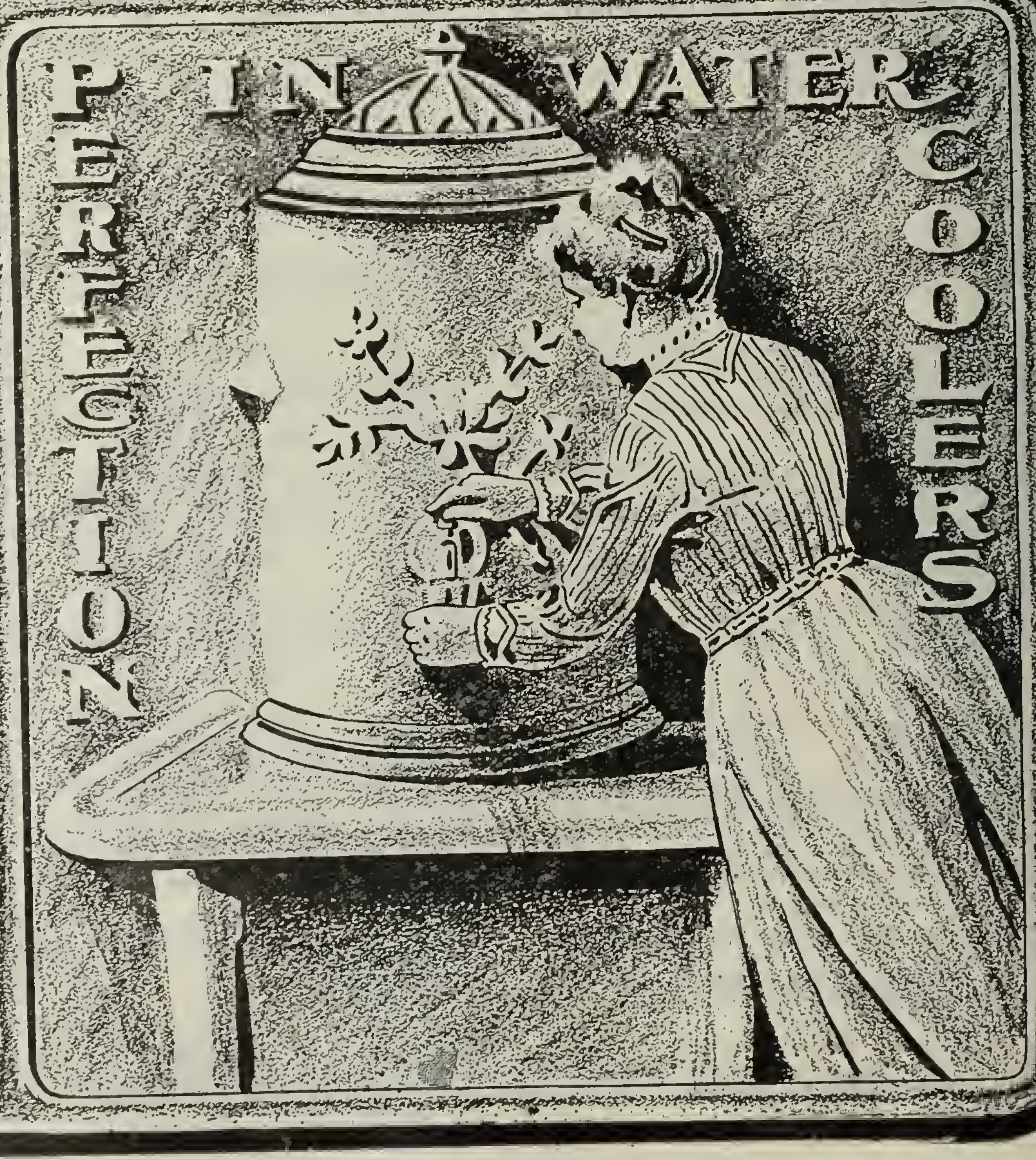

THE METAL WORKER.

NEW YORK AND CHICAGO.

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A Problem of Business.

An old adage has it that "Competition is the life of trade," and under some modern conditions it might well be added, "and death to tradesmen." Where competition is sharp the profits are naturally small and dangerous, particularly to such as are engaged in those branches of the building trades which flourish best in special seasons, and which have their dull seasons. In these trades, a sufficient profit must be made during the active season to tide the business over the dull season. There is such sharpness in modern competition that the profits are often pared below the margin of safety. This affects the large manufacturer who markets his products through the jobber, as well as the conservative tradesman, who has to compete with those who, through lack of business experience, are apt to underestimate the cost and bid too low on work. Those who bid too low on work often use the pretext of quick sales and small profits. There are some branches of business that cannot be conducted along these lines, and those who attempt it are a menace to all concerned in these trades. These men demoralize the local buyers by establishing lower prices and creating a demand for these low prices which cannot be met by men who conduct their business properly, pay their bills, and desire to live in such a manner as a substantial tradesman has the right to live. It is a matter of common knowledge in the business world that those who bid too low invariably secure larger credit than should be extended to them, and their slowness in paying bills is a great hardship to the jobber. This class of trade not only demoralizes its local competitors, but from it many jobbers have received financial blows from which it has taken them years to recover. And instances are not wanting where jobbers who have catered to this class of trade have made failures, bringing home to the manufacturer losses which were felt by the small dealer first. Wherever the interests of the trade as a whole do not suffer the utmost freedom in the conduct of trade is to be commended. On the other hand, wherever local competition is of a character that interferes with the conservative tradesman who pays his bills regularly and does first-class work, there must be little objection to such restrictions in the extension of credit and other details of trading as will protect the local tradesmen. This is the character of trade protection which is maintained by the most reliable houses in all branches of business. The success of a business house depends on securing a reasonable profit from its sales, so that through the various mazes of the trade, from the smallest dealer to the largest manufacturer, all bills may be paid and ultimate failures in any branch be avoided.

B. Frank Hooper.

In the death of B. Frank Hooper the business world, in which he was a prominent figure, suffers a loss that it can ill afford. The position held by Mr. Hooper was unique in that he enjoyed the perfect confidence not only of his *confrères* and competitors in the trade, but also of his customers. His acquaintance was not confined to any section. He was well known and held in high esteem wherever the problems of the plumbing trade were discussed, either by manufacturers, dealers or plumbers. This feeling of perfect confidence in the man was largely due to his efforts to better the condition of all tradesmen with whom he came in contact and his utter freedom from selfish or ambitious motives. He was possessed of a generous, frank, open character, and had the happy faculty of seeing a satisfactory way out of the most intricate trade complications, in which different interests seemed to clash. He took a broad view of things, and had the capacity for handling large interests successfully and in a manner which inspired great confidence in his business judgment, a confidence that was always justified. Much of his success in preserving harmony in trade councils was due to his ability to induce those interested to take a liberal and common sense view of the conditions, and to secure their willingness to make such concessions as he judged necessary to the furtherance of their mutual interests. Those who knew Frank Hooper best feel that his removal leaves vacant a place that will be exceedingly difficult to fill. A study of the characteristics which marked his career should be an incentive to their adoption by those who remain, so that the results of his labors may be continued. His record should influence all branches of the trade to approach perplexing questions in the same unselfish, common sense spirit that was customary with him, and to endeavor to adjust them in a spirit of fairness to all concerned. No better tribute to his memory can be paid by the interests which he represented than to follow the example which he set.

The Sanitary Improvement of Havana.

The sanitary regeneration of Havana seems to be going on most satisfactorily under the guidance of the Military Governor, General Leonard Wood, and the active management of Major Gorgas, the chief sanitary officer. A report recently issued shows that in the three years of American occupation the city of Havana has been transformed from a hot bed of disease and death into a municipality which, in its sanitary aspects, compares favorably with any large city of the United States. The figures supplied by Major Gorgas are really remarkable. In the last year of Spanish occupation there were 21,252 deaths in Havana, a rate of 91.03 per thousand. In 1899, the first year of American occupation, the death rate had fallen to 33.67 per thousand. So successful has been the conflict with disease and death in subsequent years that the deaths for February last indicated an annual rate of only 17.06 per thousand. This is a smaller death rate than that of New York, Baltimore or London, England. A further remarkable proof of the change that has come over the sanitary character of Havana is the statement that in the past six months there has not been a single case of yellow fever in that city, which lends substance to the expressed belief of the American sanitary authorities that that scourge has been eradicated from Havana, which in former years was one of its strongholds.

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A short time since the question of an age limit for labor was brought up at a meeting of the Chicago branch of the American Federation of Labor, resulting in an active discussion, in the course of which considerable heat was developed. The assertion was made by several members that it was becoming a practice with many employers of labor not only to decline to take on men of, or past, middle age, but to discharge such employees as had reached 45 years, or thereabouts, for the purpose of filling their places with younger men. Some of those present said that they had been obliged to dye their hair when it was turning gray, to cut off their whitening beards and discard their spectacles, when seeking work, so as to make themselves look young enough to secure employment. Otherwise, they claimed, they could have no hope of getting a job. Probably there is some basis of truth in this assertion. Some employers may think it good policy to rid themselves of the older men, for the purpose of taking on young men. But it is doubtful whether such action is at all widely followed, because it is not in line with the hard headed common sense which usually characterizes the American employer. Leaving all sentiment out of the account, we believe that few employers will be found willing to discard old and experienced workmen, who are competent to perform their duties, in favor of untried youths. A workman who is worth his wages will seldom find it hard to secure employment in this country, no matter what may be his age. A possible explanation of the thing is that, after reaching middle age, some workmen lose much of their energy and ability, and, being without ambition, are content to settle down into a dull routine, which inevitably results in a deterioration of the quality of their work. Notwithstanding the fact that there is a large demand for young men to-day in all lines of effort, it is hard to believe that the older men, who are competent to do their work, are being displaced to make room for younger men, simply for the reason that the other men are younger. It goes without saying that the experience gained in any line of business or industry, which comes only after years of service, must be regarded by all intelligent employers of labor as one of the most valuable assets of their employees.

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There is little doubt that there is an opportunity for American manufacturers to secure a better position in South American markets. This is a field in which less effort has been made than the importance of the market justifies. It is, indeed, undoubtedly true that even the great markets of the Old World and the Colonies have not been cultivated with as much care as they deserved, but to South America there has been accorded a larger measure of neglect. As a result the percentage of our business in these markets is proportionately smaller than in other quarters. It is true that in South America there is less willingness to take hold of new lines of goods than in many other fields, and it is consequently a matter of some labor to introduce them. When the trade, however, is established it is difficult to displace. There are some foreign fields which have something of the American spirit, in which change and novelties are regarded with favor, and there is a constant looking for something better. One of the fixed traits of the Spanish character is that if he finds an article suited to his needs he continues to call for it. Hence, trademarks and brands which find a place in such markets are valuable properties. If the trade of these countries is found difficult to obtain, there is, in view of this fact, a permanence in it when once secured which justifies vigorous and patient efforts on the part of our manufacturers to obtain a foothold and establish relations which promise to be not only permanent but large and profitable.

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I have read the very interesting articles in *The Metal Worker*, in reference to what furnacemen should know and what the furnace manufacturer should know, and feel satisfied that both should know more. My reflections on the information that should be possessed by my colleagues led me to select the title, " What a Stove Man Should Know," for the further diversion of the readers of *The Metal Worker*. It is not my intention to treat this subject exhaustively, for my modesty forces me to admit that I do not know it all, and I hope that others will supply what my contribution may lack.

A stove man should know, first of all, that to be successful he must maintain his reputation, both with his community and with the stove manufacturers. To do this the stoves he sells must be sold at a reasonable profit and only to people who will pay for them in cash and within a reasonable time. A reasonable profit does not mean 25 per cent. on the price given in the bill received from the manufacturer. There are other things to be added to that cost before the selling price can be determined. Every man should sit down and figure up what it costs him for rent, clerk hire, horse feed, postage stamps, light, heat and many other things during the year, and everything that he sells should bear its proportion of this expense. I am satisfied, from some of the competition that I am forced to meet, that some of my competitors do not know this. A stove man should surely know it. He should further know that so far as coal stoves are concerned the trade in them is limited to a comparatively few months, and that any stock which he carries over is money locked up, just as effectually as the pennies are in a youngster's savings bank, when he does not know how to open it. A stove man should know enough to select stock that will sell quickly and also not to buy more than he can dispose of in one season. He will not lose many sales if he is quick in paying his bills, uses the telegraph and telephone to advantage, and makes the stoves that he has sold to other people serve as samples to sell from. If, however, he loses the chance to sell three or four stoves on which he might make a profit of from $12 to $16 or $17, it is better to do so than to carry over a couple of hundred dollars' worth of stoves and lose in interest on the money, as well as the use of the money from having it tied up.

Many of the men who sell stoves in this country have occasion to repair them themselves in the latter part of the winter, when they cannot afford to keep all the help that they have had in the fall. This should lead them to select stoves so constructed that a new grate can readily be put into the stove, or a new fire pot, if it is a heating stove, or new fire bricks, fire back and oven plates, if it is a cooking stove. People do not expect to pay too much money for repairs, and if the stove man does not know enough to select stoves that can be repaired easily and quickly he will find his best customers his worst enemies and his own bad judgment a menace to the trade as well as to his profits.

The stove man should know enough to refuse to connect a good stove with a poor chimney. If the chimney is wrong insist that it shall be remedied before a new stove is connected with it. Otherwise a stove that is a winner may receive a black eye, and his competitor have the run on the stove trade that he has been enjoying. He should know better than to be economical in the size of the stove pipe. Use big pipe. Then the stoves will operate freely and there will be no trouble about selling a lot of dampers to regulate the drafts, and the owners of the stoves will have no complaint to make on account of poor operation.

The stove man should also know that the way iron is melted in the foundries is to mix the iron and coal in a cupola. This arrangement surrounds the pig iron with fire and the result is that it melts. If he thoroughly grasps this fact when somebody comes in and states that a grate was made of poor iron he can point out in a pleasant manner that the grate was made of as good iron as is ordinarily found in stove castings, and that it has been melted by exactly the same process that it was melted by in the first place when it was poured into the mold forming the grate. He can further explain that this condition in the stove was brought about by allowing the ashes to accumulate under the grate. Then when the fire is cleaned there are hot coals below and above the grate bar, and the draft makes it hot, yea, verily, exceedingly hot, for the grate bar, even to melting it.

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When I awoke this morning early and heard the song of the robin, one of the harbingers of spring, it made my heart leap for joy to think that the time for the singing of birds had come. While it should have made me feel at peace with all the world, yet I could not forget the little item by " F. B. K." I read in *The Metal Worker* of April 5 in regard to the rotary system of heating, and the most annoying thing to me was that he was an Ohio man. I was an Ohio man for 35 years or more, and it hurt me to think that so many Ohioans had been imposed upon in this way.

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I shall never forget the remark of an old furnace dealer, whose business has now become national and who knows how to do things to perfection, when he said to me some three years ago that his experience and observation convinced him that eight out of every ten furnacemen ought to be in the penitentiary. He meant those men particularly who gave instructions and those who did the work. The State has no law governing such cases, else, I am afraid, our friend would have found himself caged in. I am glad to know that Ohio claims such a man as Isaac D. Smead, whose ideas on heating and ventilating have revolutionized the whole country, and many others I know. It would pay our rotary man to take a course of instruction at the feet of some of these men.

It is one thing to install a system correctly and another thing to run it. Public buildings, and churches particularly, spend thousands of dollars in putting in excellent systems of heating and ventilating. Then they hire the cheapest janitor they can get and wonder why the system does not work. Again, look through the list of furnace makers and see what a variety there is. As every one of these manufacturers not only claims the best but wants agents in every place of importance and size, it can readily be seen that with the limited number of men who really know anything about heating, and especially ventilating, they must pick up a vast number of novices and inexperienced men to carry out their plans. The real care that many seem to have is to get rid of furnaces. To the average man a furnace is a furnace, and the cheapest generally goes.

"Confidential" of this city has a good level head, and opening your columns to a few more men of good ideas, even though it crosses the path of the rotary man, will make *The Metal Worker* more sought after than ever before. I have had experience in heating of which I might give you an instance, but this is already long enough. If agreeable to you I will give it in a later issue. I am for good, fresh air, first, last and all the time.

The Furnace Work Record.

Additional interest will attend the study of the data contained in the Furnace Work Record presented in this issue from the fact that the information given is of plants in the extreme East and West, and in one of which gas fuel has been used entirely. The wide interest that has been taken in the study of the data presented by the Record would appear to sufficiently demonstrate its value. It is through the Furnace Work Record that our readers are enabled to enjoy the excellent article on furnace heating presented in this issue by James A. Harding, who is well known to many in the furnace trade and a writer whose articles were read with close attention when presented in *The Metal Worker* several years ago.

The attention that has been given to the articles on furnace work which have appeared in *The Metal Worker* during the past few months is evidence that the furnace trade at large are deeply interested in the development of some method of figuring their work that will give more positive assurance of satisfactory results than those which have been employed in the past. That experienced men avoid errors is true, but it is not fair nor in keeping with the progress in other branches of the heating trade that the public who support furnace heating should be called upon to pay for the errors that are made by men in acquiring an experience which will enable the completion of successful work.

It may surprise many of our readers to know that the suggestion has been made that such articles as we have presented are liable to prove a disadvantage to the furnace trade, by impressing those who might otherwise engage in it with the idea that it is too complicated for them to understand, and that they would be apt to hesitate about taking up this branch of business, the sale of furnaces being thereby reduced. We cannot but feel that this is an illy considered opinion. Nothing could increase the popularity of furnace heating throughout the country more than a reduced percentage of unsatisfactory furnace systems.

Probably one of the best methods of securing a larger percentage of successful plants is to present the well formulated methods of procedure followed by men of long experience and successful practice. Under the old system a man without either was unable to design a furnace heating system, or he had to follow such advice as was available and abide by the results. Should it be possible to formulate a system of laying out furnace work with such rules as can be applied by any careful, practical business man, not only will a great gain be made, but much benefit should accrue to all who are interested in furnace heating.

It has been claimed that it is not necessary to consider some of the small details which have been taken into consideration in some of the articles, and that furnacemen will not enter upon such a laborious task. If success is to attend their practice these things must be considered by the furnacemen. It has been the experience of experts sent out by furnace manufacturers and of experts who are carrying on the furnace heating business that the majority of the failures that come to their attention are due to the neglect to take into account the various small items, or details which are considered laborious, which, if they had received proper attention when the plant was designed and installed, would have obviated the expense to the manufacturer, the owner and the furnace contractor of righting the errors made.

It often seems as if the expert gave no consideration to these little things, but it may be safely relied on that the careful and laborious consideration of these little details gave him the mastery of his business that makes the work which he designs successful. It is only after such study and training that he is enabled to reduce his methods to a simple system.

We hope that the use to which the columns of *The Metal Worker* have been put, and to which they are open, will result eventually in the formulation of a simple system that will enable all who are engaged in furnace setting to avoid the errors which have in many instances brought into disfavor this excellent method of heating houses.

FURNACE RULES AND CALCULATIONS.

BY JAMES A. HARDING.

While it is some time since I have written anything for publication, the subject presented in *The Metal Worker* Record of Furnace Work is of such general interest that I have felt constrained to devote a few hours to its consideration. I have noted upon a blank certain data under the various headings concerning a furnace plant installed last summer in a country house in the vicinity of Boston and present it herewith.

The desirability of a formula for determining the various proportions of a warm air furnace plant for a dwelling has often appealed to me, and I see no reason why such a formula, equally as accurate and satisfactory as those employed in steam and hot water heating, cannot be arrived at along the same lines of calculation.

The real basis of such calculations is the number of heat units available in the fuel. Each pound of good anthracite coal contains from 13,000 to 14,000 heat units; and in its consumption in a good steam or hot water heater it is generally proved that from each pound there will be 10,000 units of heat utilized—*i. e.*, disseminated in the apartments to be warmed.

I am of the opinion, based upon an experience of some years with the three types of heaters, that a good warm air furnace will assure the utilization of as large a proportion of the fuel consumed as a good steam or hot water heater—*i. e.*, 10,000 heat units per pound of coal. It thus becomes obvious that if we can determine the total heat units required for warming a house for a given period of time we can easily calculate the weight of coal required for that period.

Referring to the accompanying blank, you will note that the house in question, which is of the ordinary frame (wood) construction, contains 26,200 cubic feet of space, 2140 square feet of exposed wall surface and 573 square feet of glass surface. It has a cold air box 16 x 24 inches, and this box has been open to an extent of 12 x 16 inches, or 1 1-3 square feet, during the past winter. The velocity of the air entering the box has been, under average conditions, 5 feet per second.

We will assume that the usual contract was made to warm the house to 70 degrees in zero weather, therefore the furnace should be adequate to properly meet this condition for an extended period of time.

For a performance of 24 hours we will assume the average temperature of the whole house to be 65 degrees for 12 hours and 55 degrees for 12 hours, or 60 degrees for the whole 24 hours. One square foot of glass will dissipate 1 heat unit per hour per degree difference of temperature. Four square feet of exposed wall surface are equivalent to 1 square foot of glass, and the heating of 55 cubic feet of air is equivalent to 1 square foot of glass.

The glass and wall surfaces being known, we have to calculate the volume of air to be heated. It is determined to a very close approximation by many proved calculations and much experience that with the ordinary type of dwelling one and a half times its whole interior space in cubic feet of air per hour will find ingress through the incidental and accidental openings and crevices. This house contains 26,200 cubic feet of space, hence the air thus admitted will be 39,300 cubic feet per hour.

A cold air box of 1 1-3 square feet cross sectional area with an air velocity of 5 feet per second will admit 24,000 additional cubic feet of air per hour. Hence

THE METAL WORKER RECORD OF FURNACE WORK.

If this blank is filled out as shown by the example given below, it will serve as a valuable guide in planning other furnace jobs.

Building Heated.	Grate Surface.		Heating Surface.	Type of Furnace.	Coal Burned per Season.	Space Heated.	Outside Dimensions and Character of Building.	Wall Surface.	Number and Size of Windows.	Glass Surface.	Equivalent Glass Surface. The E. G. S. equals the glass surface plus one-quarter of the difference between the wall surface and the glass surface.	Number and Size of Hot Air Pipes.	Area of Hot Air Pipes.	Size and Area of Cold Air Supply.		Proportion of Hot Air Pipe Area to Space Heated.	Proportion of Hot Air Pipe Area to Equivalent Glass Surface.	Proportion of Grate Area to Space Heated.	Proportion of Grate Area to Equivalent Glass Surface.	Proportion of Grate Area to Heating Surface.	Proportion of Heating Surface to Space Heated.	Proportion of Heating Surface to Equivalent Glass Surface.	Temperature at Register	Temperature of Air Outside.
	Dia.	Area.	Sq. Ft.		Tons.	Cubic Feet.		Square Feet.		Sq. Ft.	Square Feet.			Inside.	Outside.	Sq. in. to cu. ft.	Sq. in. to sq. ft.	Sq. in. to cu. ft.	Sq. in. to sq. ft.	Sq. ft. to sq. ft.	Sq. ft. to cu. ft.	Sq. ft. to sq ft.		
Reported by Jas. A. Harding Sharon, Mass Frame House near Boston	Firepot 30"	Area 706"	80	Boynton Gas Tight Cast Iron Revertible Flue	19	26,200	3 story frame Ceilings 8'-6", 8'-0" 8'-0"	4⌊2140 535		573	573 535 1108	12 1-14-153 1-12-113 2-10-78 3-9-63 3-8-50 2-7-38	153 113 156 189 150 76 837	16 x 24		1-31	1-1.3	1-37	1-1.57	1-16	1-327	1-13.8		0
Reported by W. G. McPherson Portland, Ore. Residence for Mr. N. E. Ayer	30"	707	83	No. 655 "Perfect" Castradr.	17	31,883	3 story frame Ceilings 13, 10 and 9 27 x 68 x 37	6296	43	734	734 1574 2308	9-7 2-12 3-10	342 226 234 802	Outside 20 x 30 600		1-40	1-28	1-45	1-3.2	1-16.7	1-384	1-29	140	0
Reported by W. G. McPherson Portland Ore. Residence for Mr E. Ehman	25"	490	65.5	No 83 "Perfect" Castradr.	12	30,628	3 story frame Ceilings 13, 10 and 9 52 x 34 x 33	5676	39	702	1419 702 2121	4-7 3-10 7-8½	152 234 399 785	Oval. Capacity 650		1-39	1-2.7	1-62.5	1-4.3	1-19.2	1-467.6	1-32.4	140	0
Reported by W. G. McPherson Portland, Ore Residence for Mr. F. M. Warren	30"	707	83	No 655 "Perfect" Castradr.	20	34,140	3 story frame Ceilings 13, 10 and 9 68 x 52 x 37	8880	77	1386	2220 1386 3606	7-7 8-8½ 1-10 1-11 3-12	266 444 78 95 339 1222	From outside thro' underground duct & cold air room. 30 x 42 1260		1-28	1-3	1-48.3	1-5.1	1-16.7	1-411.3	1-43.4	140	20°
Reported by J. J. Grier Martin's Ferry, O. Hubben-Quarrier Wheeling, W. Va.	36 x 20	720	71.5	Sheet Steel Brick Set Indirect Draft. Inside Casing	Natl gas 275,600 Cu ft. 7¢ per 1000 ft	39,262	2 story frame Ceilings 9½ and 9	5072 692 4⌊4380 1095	106	692	692 1095 1787	4-12-113 4-10-78 1-9-63 1-8-50	452 312 63 827	Inside 12 x 70 840		1-47.5	1-2.15	1-54.5	1-2.5	1-14.3	1-549	1-2.5	140 to 160	60 to 80
Reported by C. E. Oldace Philadelphia Private House	24"	452ª		Tubular Indirect Draft	12	26,800	3 story brick and frame. Ceilings 9, 9 and 8 L shaped	2977 667 4⌊2310 577	44	667	677 577 1254	5-8-50 3-9-63 3-10-78	250 189 234 673	20 x 30 600		1-40	1-1.8	1-60	1-2.7				155 to 170	12
Reported by C. E. Oldace Philadelphia Private House	30"	706ª		Tubular Indirect Draft.	17	36,000	3 story stone. Furred inside L shaped	4110 860 4⌊3250 812	62	860	812 860 1672	1-8-50 3-9-63 4-10-78 3-12-113	50 189 312 339 890	29 x 29½ 856		1-40	1-1.9	1-52	1-2.35				150 to 160	8

the total amount of air admitted will be 39,300 + 24,000 = 63,300 cubic feet per hour.

The average difference in temperature, as above, is 60 — 0 = 60 degrees.

	Square feet.
Glass surface.. =	573
Glass surface equivalent in exposed walls $\frac{2,140}{4}$........=	535
Glass surface equivalent in air admitted $\frac{63,300}{55}$..........=	1,151
Total equivalent glass surface or heat units dissipated per degree difference in temperature............=	2,259

2.259 × 60° = 135,540 total heat units required per hour.

$\frac{135,540}{10,000}$ = 13½ pounds of coal required per hour.

13½ × 24 = 324 pounds of coal required for 24 hours.

Having determined that 324 pounds of coal will be burned in 24 hours in zero weather, we are now in a position to determine the size of the fire pot (*i. e.*, the furnace). At this point I will venture the opinion that when even the best kind of furnace requires to be coaled oftener than three times in 24 hours, as this office is usually performed, it is working under the adverse condition of too rapid combustion, wastes coal and will not utilize 10,000 heat units per pound burned.

Let us assume three firings in 24 hours, or 108 pounds at each time, for a basis. A cubic foot of anthracite coal weighs about 50 pounds, hence $\frac{108}{50}$ = 2 1-6 cubic feet of space in fire pot required at each firing. The fire pot should be half full of coal after the grate is shaken each time; hence it should have 2 1-6 × 2 = 4 1-3 cubic feet capacity.

The average depth of furnace fire pots is about 1 foot, hence $\frac{4\ 1\text{-}3}{1}$ = 4 1-3 square feet (624 square inches) area, or 28 + inches diameter, or, with the usual shape of cast iron fire pot, say a 26-inch grate and 30-inch top diameter.

From the foregoing we establish a rule for determining the size of furnace (fire pot) required, as follows, viz.: Multiply the total glass surface equivalent by the average difference of temperature (indoors and out) and divide this product by 10,000. The result will be in pounds of coal per hour. Then divide the number of pounds required for eight hours by 50, double the quotient, and the result will be the cubic feet of space required in the fire pot.

I have purposely omitted consideration of several matters affecting the general result, such as north and west exposures, fire places, &c., with a view to confining myself to the observation of general principles; therefore to some extent the above rule will require correction.

I had purposed to take up the matter of pipes and registers, but will postpone its treatment as a special subject for a future paper.

STOVE ASSOCIATION NEWS.

The Southern Association of Stove Manufacturers are holding a meeting at Chattanooga, Tenn., this week, and it is expected that they will advance the prices of stoves 5 per cent.

The Ohio Valley Association of Stove Manufacturers met at Columbus, Ohio, on the 22d inst. and resolved to make an additional advance of 5 per cent. on cast stoves and ranges, having made one advance of 5 per cent. in March.

The New York stove manufacturers are quite generally advancing the prices of their goods where the margin of profit has been too small. The approach of the National Convention is occupying the attention of the local stove men, notwithstanding that the members, at the last convention, stated that they invited themselves to New York this year and expected no such generous entertainment as was dispensed two years ago.

The Gate City Stove Works of Catlettsburg, Ky., have increased their capital stock from $2000 to $10,000.

ODD PLATES.

The Shelby Stove Company of Shelby, Ohio, have received one order for 10,000 Stoves, and another for 2500. They are now producing Stoves at the rate of 100 a day, and are employing a large force of workmen.

The Carbon Stove Works are to be removed from Weissport to Lehighton, Pa., the Board of Trade of that place having offered a financial inducement.

The H. Adler Mfg. Company of Pittsburgh, Pa., have bought 5 acres of ground at West Carnegie, Pa., upon which they will erect a plant for the manufacture of Gas Stoves and Ranges. The new works will embrace seven buildings, including a foundry, 70 x 260 feet; construction room, 60 x 200 feet; warehouse, 60 x 200 feet; machine shop, packing room and press room, 50 x 100 feet. It is expected that the buildings will be completed by July.

The Great Western Stove Company, Leavenworth, Kan., have prepared plans for the erection of a six-story warehouse building at Omaha, Neb.

The Humbert Stove Company of Lower Turkeyfoot Township, Somerset County, Pa., have been incorporated with a capital stock of $10,000 by Irvin T. Huff, John C. Forsyth, F. A. Walker, Rufus King, Jr., and W. L. Brinton.

The Stamford Gas Stove Company of New York City have been incorporated with a capital of $60,000. The directors are W. Stewart Horner, Pittsburgh, Pa.; Warren Collins, College Point, N. Y., and Franklin Wardwell of Stamford, Conn.

The Stove trade will learn with regret of the death, on April 19, at his residence in Troy, N. Y., of A. Gould Millard, at the age of 57 years. Mr. Millard represented Rathbone, Sard & Co. of Albany, N. Y., on the road for 21 years, but at the time of his death he was connected with the Taunton Iron Works of Taunton, Mass. He was a member of the Masonic fraternity and several other societies. He is survived by his wife and two daughters.

J. M. Litchfield, manager of the New York branch of the Mt. Penn Stove Works of Reading, Pa., has secured the services of W. E. Russell, formerly with the Lehigh Stove Mfg. Company of Lehighton, Pa., to look after the interests of the Queen Esther and Penn Esther Stoves and Ranges in New England.

Lazard Kahn of F. & L. Kahn & Bros., Hamilton, Ohio, was a recent visitor among the Stove trade of New York. Naturally, from the frequent use of his name in the daily press in connection with the proposed consolidation of Stove manufacturers, Mr. Kahn had to answer many questions in reference to the consolidation scheme, which many expect to hear announced when the National Association of Stove Manufacturers meets in New York City on May 14.

After being out a week, the striking foundrymen at the Charleston Stove Company's plant at Charleston, Ill., resumed work this week, the company having conceded their demand for a 5 per cent. advance in wages. Seventy-five molders went out last week, causing the shut down of the plant.

Gruenhagen Brothers, St. Paul, Minn., are about to erect a new building for the manufacture of Stoves and for storage purposes on Dudley avenue, adjoining their present building. The new structure will be 66 x 100 feet, and will have three stories and basement. The cost will approximate $6000.

John B. Butler, a well-known business man of Troy, N. Y., died on April 6, at his home in that city, aged 64 years. He was born in Schagticoke, N. Y., and went to Troy when 19 years of age, shortly after which he engaged in the retail Stove business as a member of the firm of Williamson & Butler. Later Mr. Butler conducted a Stove and House Furnishing Goods store at 401 River street. He was a member of the Fifth Avenue Baptist Church, and was a man of sterling character, held in high esteem in business circles. He is survived by a widow, one son and two daughters.

National and Nesco Oil Cans.

The National Enameling & Stamping Company are now making, at their Baltimore factory, the National corrugated oil can, of which illustrations are given herewith. Fig. 1 represents the National oil can with stamped, fluted breasts, large screw caps of brass and a spout. These spouts are double seamed in the breasts and cannot be knocked off or staved in, which often happens with the old method of putting on spouts. The manufacturers state that these cans are made of the best quality of sheet steel and are galvanized after being put together. The corrugations of the bodies and breasts makes the cans much stronger and more durable than the plain ones. Fig. 2 shows the same can finished with an angle faucet instead of a spout. These cans are made of 1, 2, 3, 5 and 10 gallon capacity.

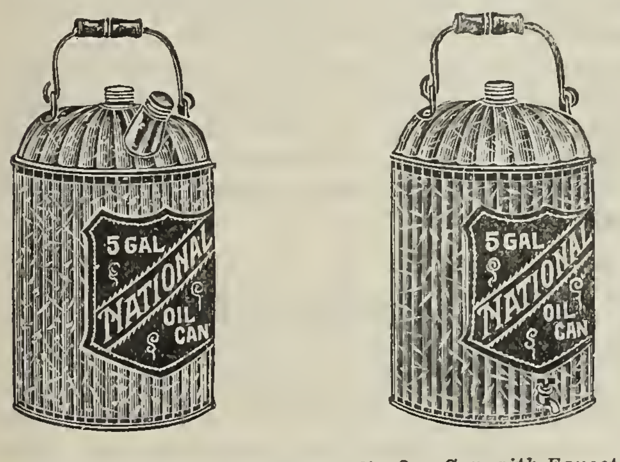


Fig. 1.—Can with Spout. *Fig. 2.—Can with Faucet.*

National Corrugated Oil Cans.

In Fig. 3 is shown the Nesco pump oil can, made of sheet steel, galvanized and corrugated. It is provided with an improved removable suction pump, with long spout made of one piece, which can be adjusted to fill any ordinary lamp. The general construction is similar to that of the National cans. Special attention is directed to the fact that the pump is jointless and admits of a continuous flow of oil. When the can is not in use, all the exposed parts are completely covered by a hinged dome cap. This style of can is made of 5 gallons capacity.

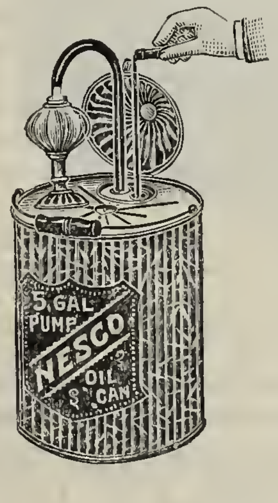


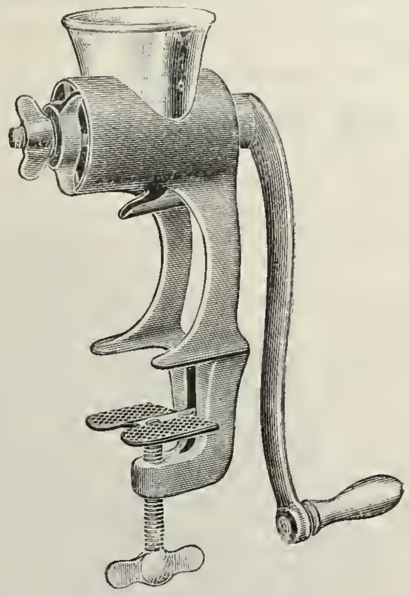
Fig. 3.—Nesco Pump Oil Can.

Compressed Air Washing Machine.

The Brooks Compressed Air Washer Company of Redwood Falls, Minn., will shortly move their entire plant and business to Minneapolis, where they will engage in the manufacture of their patent washing machines on a more extensive scale than ever before. For this purpose the owners of the machine have incorporated a company under the above title. The officers of the company are: J. W. Elliott, president; A. Clark, vice-president; M. E. Baum, treasurer; A. H. Nelson, secretary, and Dan Clark, manager. The company's washer differs from those now on the market, being based on a principle in which compressed air is used. Air and water are forced through the clothing, which process, the manufacturers claim, will clean the clothes in less time and more thoroughly than with the ordinary machine.

Classic Food Chopper.

The Griswold Mfg. Company, Erie, Pa., are putting on the market the new patent Classic food chopper, an illustration of which is given herewith. Two special points of excellence in this article are the drip spout, which carries the juice from the back of the cutter to the front into the dish, and the particularly effective table clamp with which the chopper is equipped. This is claimed to be a great improvement over the old round clamp, which chews the table and is very hard to make hold firmly. These choppers are made in two sizes, with a capacity of 2 pounds and 2½ pounds of meat per minute respectively. In designing the Classic chopper the company state that they endeavored to make as near perfect a machine as possible, embodying the best features found in others, with several valuable improvements. The face of the chopper being convex and the knife machined to exact fit, always seats the knife in the right place, giving a fine, clean cut. In cutting juicy fruits in the ordinary chopper, there is always some leak in the back end on to the floor. This is avoided by the patent drip spout attachment. All parts are made strictly interchangeable, and the castings are smooth and well tinned. The manufacturers claim that this machine does not mash or choke up, but cuts cleanly. It is adapted for use with all kinds of vegetables and fruits. Each chopper is furnished with three cutters—coarse, medium and fine. The weight of the No. 1 chopper is 4½ pounds, and of the No. 2, 5 pounds. They are furnished packed six in a case.



Classic Food Chopper.

Retail Hardware, Implement and Vehicle Association of the Indian Territory.

The third annual meeting of the Retail Hardware, Implement and Vehicle Association of the Indian Territory will be held at Vinita on Tuesday, May 13. In a circular issued by Sam R. Frazee, Vinita, secretary-treasurer of the association, urging dealers to attend the meeting, attention is called to the evils confronting the hardware, implement and vehicle trade in that section of the country, and the necessity for co-operation on the part of dealers in removing them. It is intimated that the association will this year affiliate with the National Retail Hardware Dealers' Association, thus putting them in a better position to correct the abuses from which they are suffering. Mr. Frazee states that a good programme has been prepared for the meeting, and that visitors, whether members or not, will find the occasion interesting and instructive.

New York State Retail Hardware Association.

The movement for the formation of a retail hardware association in New York State has taken definite shape, and a call for a meeting to form such an organization has just been issued by John R. Taylor of Little Falls, to whom great credit is due for the difficult and arduous preliminary work. The meeting for formal organization will be held at the Hotel Yates, Syracuse, on Monday and Tuesday, April 28 and 29. It is expected that M. L. Corey, the energetic and popular secretary of the National Retail Hardware Dealers' Association, will be present. Mr. Corey will be in a position to render effective service in connection with the work of organization. Over 200 retail hardware concerns in all parts of the State have signified their intention of joining the association, and some 40 more have expressed their approval of the project. While a preliminary meeting for general discussion will be held on Monday afternoon, the real work of the meeting will be done on Tuesday. It is therefore suggested that those who find it inconvenient or impossible to be present at both sessions will not remain away entirely on that account, but will attend on Tuesday.

Stove and Hardware Dealers.

Fred. W. Eberly, a member of the firm of Eberly's Sons, Stove dealers in Washington, D. C., died on April 11 at his home in that city. He leaves a widow and two children.

The Blacklock Foundry, South Pittsburgh, Tenn., have adopted a method for packing their goods which has met with generous approval from the trade. Most of their goods, having a more or less polished finish, are apt to rust. In order to avoid this and guard against loss to the dealer, the company wrap the small articles, such as Sad Irons, &c., in wax paper, over which is put the regular hardware paper. This prevents rusting and enables the dealer to handle them without loss.

The tin shop and Stove store of Jacob Otto, at 643 Penn street, Reading, Pa. was considerably damaged by fire last week.

Snider Bros. & Allen have succeeded Snider Bros. in the Hardware, Stove, Agricultural Implement, Sporting Goods and Furniture business, at Kalona, Iowa. They have a new wareroom, 32 x 50 feet.

August F. Mueller is successor to Huff & Mueller in the Hardware, Stove and Heating and Plumbing business in Webster City, Iowa.

W. S. Long has lately acquired the Hardware and Stove business formerly carried on by Haman & Neptune, Marquette, Neb.

H. G. King has sold his Hardware, Stove, Agricultural Implement and Buggy and Wagon business, at Mt. Union, Iowa, to Hillyard & Cornic.

Phil Scharf has succeeded Scharf & Morrison in the Hardware, Stove and Sporting Goods business in Newton, Iowa.

Harkins & Willis, Ann Arbor, Mich., are manufacturing Jim's Wire Cone Toaster, for toasting bread on a gas or gasoline stove. The device has a wire cone, which becomes red hot when placed over the flame. By laying the bread on the cone it can then be toaster quickly and evenly without smoke or smell. The manufacturers advise us that the demand for this Toaster has been very gratifying, both domestic and foreign, quite a number of them having been exported to England, Australia, Holland, Canada and other countries.

Peter Burger has just opened a new store in Madison, Wis., handling Shelf and Heavy Hardware, Tinware, Sporting Goods, Furnaces, &c. Mr. Burger will also conduct a repair shop.

Edward H. Kinney has recently been elected secretary of the Rochester Lamp Company, 38 Park place, New York, and is now in charge of the sales at this point. Mr. Kinney will be very favorably remembered by the Hardware and allied trades from his connection with the Iron Clad Mfg. Company up to two years ago, for a period of 20 years. The Rochester Lamp Company, under the direction of those now controlling their interests, have just established a new factory for the manufacture of their goods at Twenty-fifth street and Tenth avenue, New York. They will make in connection with the Rochester and New Rochester Lamps a complete line of staple Lamp goods as well as other metal specialties. The company have a new catalogue nearly ready for distribution, which will include new styles and lines of goods for the season of 1902.

Wm. H. Dolson, Fishkill Landing, N. Y., has just opened up in the Hardware and Stove business. Mr. Dolson would be pleased to have manufacturers send him copies of their catalogues, price-lists, &c.

Flintstone Hardware Company, Cumberland, Md., are a new concern handling Hardware, Farming Implements, Harness, Roofing, &c., at wholesale and retail. They would be pleased to receive catalogues, quotations, &c., pertaining to lines handled by Hardware merchants.

Silverman Bros., Altoona, Pa., who are dealers in Tin and Enameled Ware, Glass, notions, &c., would be glad to receive catalogues and price-lists pertaining to General Hardware.

S. J. Stebbins Company, Hardware and Stove merchants, with temporary quarters at 16 Custom House Place, Chicago, Ill., lost all their catalogues and price-lists in the fire which destroyed their store on the 13th inst. The firm will therefore be glad to receive copies of the latest printed matter issued by concerns making the line of goods in which they are interested.

The Enterprise Mfg. Company, Philadelphia, Pa., have issued a new catalogue of their patented Hardware place, Chicago, Ill., lost all their catalogues and price-variety of goods is shown, including Meat and Food Choppers, Measuring and Paint Faucets, Fruit, Wine and Jelly Presses, Sad Irons, Lawn Mowers and Sprinklers, Grinding Mills, Cherry Stoners, Raisin Seeders, Beef Shavers, Sausage Stuffers, Molasses Gates, Self Priming and Measuring Pumps, &c.

Flavin & Watson, who conduct at Mount Sidney, Va., a tinning, roofing, spouting and lightning rod business, and who sell Tinware, Pumps, &c., have opened a branch of their business at 15 North Augusta street, Staunton, Va., where they will carry on the same line of business, adding hot air furnace work and Cast and Steel Ranges. They will be glad to receive from manufacturers catalogues and price-lists of goods in these lines.

A letter from C. G. Delzell, Damascus, Ohio, informs us that he has leased quarters in the I. O. O. F. Building in that city for the purpose of enlarging his business and giving him facilities for handling his new lines, which are Stoves, Ranges, Tinware and Hardware. He will be glad to receive catalogues and price-lists from manufacturers and dealers in these goods.

An item in our last issue to the effect that the Lalance & Grosjean Mfg. Company of New York had installed representatives in two of the city stores to conduct demonstrations of their Agate Enameled Ware was incorrect. We are advised that these demonstrations were undertaken entirely on the part of the owners of the department stores referred to, and were not initiated by the manufacturers named. The company are making shipments of their Agate Enameled Ware to a number of foreign countries, including large orders for Tokyo, Japan, and Buenos Ayres.

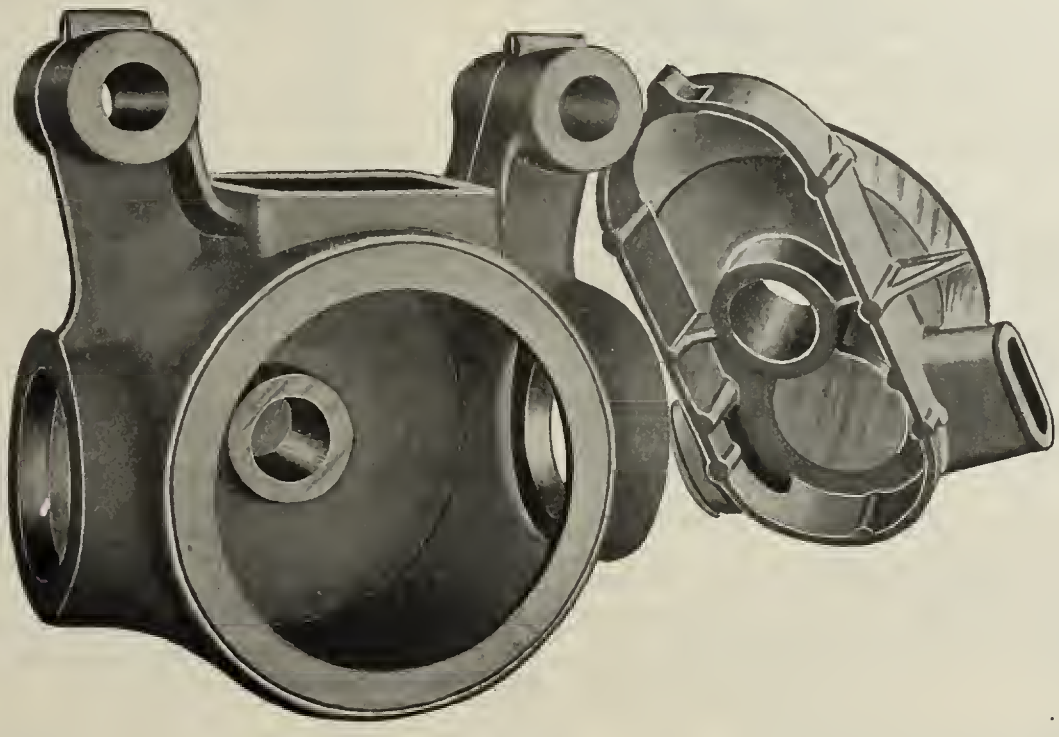
Black Silk Stove Polish Works, Lewis D. Wynn, proprietor, Sterling, Ill., have recently completed a new mixer and two automatic filling machines which have more than doubled their capacity. Trade during the first two months of 1902 is referred to as showing an increase of more than 100 per cent. as compared with last year. As to foreign trade, the concern advise us that they made their first shipment of goods to Brussels, Belgium, on the 14th ult. The different Polishes made by Mr. Wynn are being put up in new packages, which will present a much more attractive appearance than those heretofore used.

A Boston Trade Exposition.

The twenty-first triennal exhibition of the Massachusetts Charitable Mechanic Association will open in Mechanics' Building, Boston, on September 22 and close November 1, 1902. The managers of the association extend a cordial invitation to all mechanics and manufacturers having processes which can be shown, or wares which they desire to submit to the inspection of the people of New England, to contribute the same to this exhibition. It is the desire of the management to make this exhibition educational and valuable to the visitors, giving them an opportunity, under the most favorable conditions, to witness mechanical processes produced by the most skillful mechanics. The officers of the Massachusetts Charitable Mechanic Association, now in its one hundred and eighth year, consist of William N. Young, president; Edmund Hewins, vice-president; Newton Talbot, treasurer, and Alfred Bicknell, secretary.

A Difficult Aluminum Casting.

A large and difficult casting recently made by the U. S. Aluminum Castings Company of Cincinnati, Ohio, is here illustrated. It measures 15 x 18 x 11 inches, and is a crank case for a 16 horse-power double cylinder automobile engine. Castings of this description are hard to make, because of the size, the numerous openings and the tendency of the metal to shrink and draw.



A Difficult Aluminum Casting.

Utilizing Scrap Rubber.

The utilization of rubber scrap, says the *Electrical Review*, is of very great importance, for anything that can be added to new rubber to decrease its cost and increase supplies must be welcome, providing that the compound is serviceable. The scraps are sorted according to their composition, and then cleaned by boiling, which removes dirt and absorbs any adhering acids and free sulphur; but attempts to desulphurize vulcanized rubber have not been successful yet. The waste is ground between rollers and reduced to powder in emery grinders with automatic feeding, and in many cases the resultant material can be added at once to the new rubber mixture; but generally it is treated chemically by being boiled in a caustic soda solution or sulphuric or hydrochloric acid, and then steamed for about 24 hours at a pressure of four atmospheres. In another method, the ground scraps are steamed with soda lye under pressure, thoroughly washed twice to remove the lye, and then dried in vacuum. Then they are mixed between cold rollers with from 5 to 10 per cent. of benzol or mineral oil and steamed for several hours, at the same pressure as above. After either of these processes the product is rolled into plates and then added to the rubber dough.

The Molders' Wages.

There was a conference in New York City on Tuesday between representatives of the National Founders' Association and of the Iron Molders' Union of North America.

The National Founders' Association was represented by President W. D. Sargent, F. F. Towne, vice-president, of Stamford, Conn.; A. C. Pessano of the George V. Cresson Company of Philadelphia, R. D. Reed of the H. B. Smith Company of Westfield, Mass., and John A. Penton, secretary. The union was represented by Joseph F. Valentine, first vice-president, of Cincinnati, Ohio; M. J. Keough, second vice-president, of Troy, N. Y.; David Black, editor of the *Iron Molders' Journal;* William A. Perrine, business agent of the Iron Molders' Conference Board, New York, and James Flanigan of Elizabeth, N. J.

The conference was called to discuss demands made by the union as to wages and shop conditions and a demand for the nine-hour work day, ten hours being the present work day in the foundries. The question of wages and shop rules was discussed, and a joint committee was appointed to collect statistics from the various foundries as to rules and rates of wages. This committee will report at another conference on May 1.

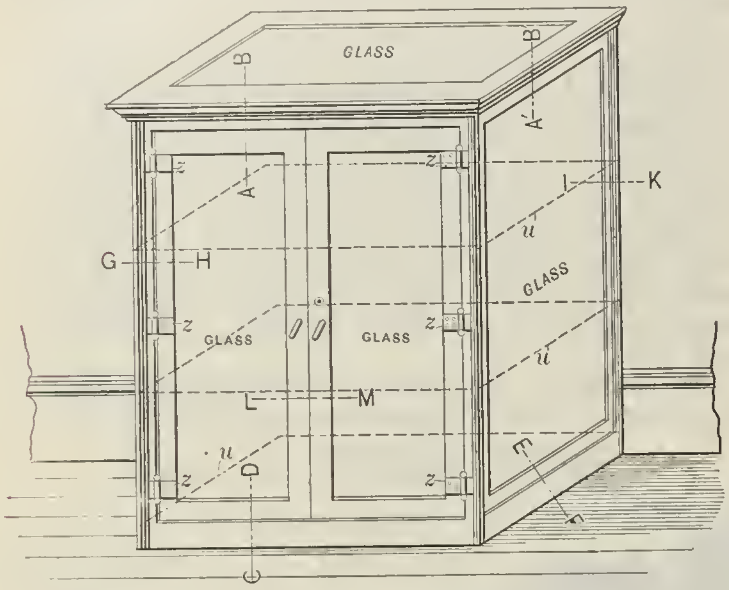
A series which should have been named "The Enchantments of Our Modern Aladdins," if considered solely from the point of view of romance, is begun in the May *Cosmopolitan*. But these sketches possess as well a business interest equally for clerk and capitalist, for manufacturer, farmer and merchant. The man who would understand the drift of our news in finance and business should read these lives, so full of incident, of chance, of hard labor and marvelous success. As it is the series receives only the commonplace name of "Captains of Industry." Each character is treated by a writer familiar with his subject.

The consolidation of a number of crane building interests under the name of the United States Crane Company is announced. The capital stock of the new company which will include firms located in New York, Cleveland, Muskegon, Mich., and other places, is placed at $100,000, which it is proposed ultimately to increase to $25,000,000.

A FIRE PROOF DOCUMENT CASE.

BY H. M. S.

In the preservation of papers and documents and other objects subject to public inspection in various institutions safety from fire is an important consideration. One of the recent improvements designed to afford greater protection is the replacing of the glass cases having wooden frames with cases having the framework made of sheet metal and for which sheet steel has many advantages.



A Fire Proof Document Case.—Fig. 1.—An Isometric View.

It is not generally known that hundreds of these glass cases are used as receptacles for china and valuable relics, which are on constant exhibition at such places as the Natural History rooms in New York and many similar places in all our cities. These relics are increasing in numbers as the years roll on, and as they are designed to be placed on exhibition for the general public, in such a manner as to be seen but not to be handled or touched, they are wisely locked within glass cases.

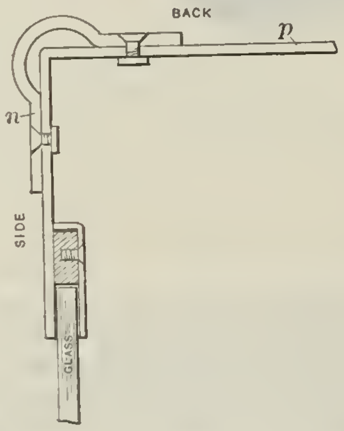


Fig. 2.—Back Corner Section.

Heretofore the frame work of these cases has been made of wood, but their rapid increase in numbers is awakening park commissioners, librarians and other public custodians to the necessity for the greater security and protection of these valuable relics and mementos, not alone from vandalism by placing them in glass cases to be seen and not handled, but by replacing the wood frame work with a material that shall be fire proof in construction. It was, partly at least, in view of this fact that the writer was recently asked to design a fire proof case of this character, with a view of its submission to the Park Commissioners of New York, where there was need for about 150 such cases in one of the park buildings.

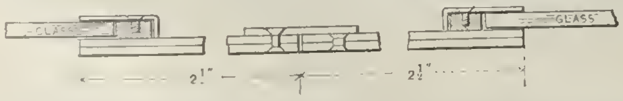


Fig. 3.—Section of Metal Door Frame.

As it opens up a phase of development of the sheet metal trade which, perhaps, is not altogether new, it may prove of interest to the readers of *The Metal Worker* to give a description of these metal cases.

An isometric view of the case is presented in Fig. 1, showing glass doors in front and glass ends and top.

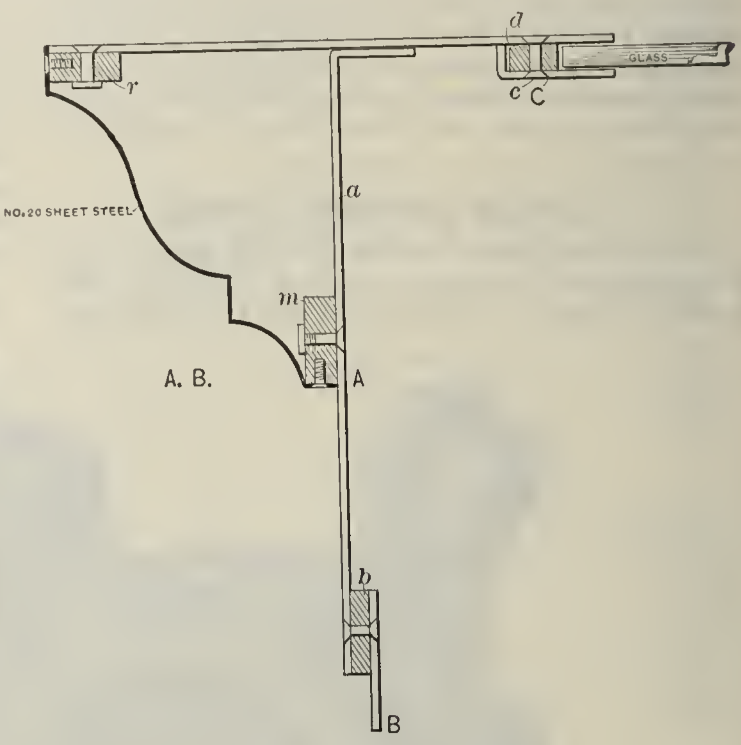


Fig. 4.—Front Top Section.

The size of the case is 6 feet wide, 8 feet high and 2 feet deep. Dotted lines, *u u u*, show the position of the shelves and *z z z z z z* show the position of the hinges for the doors. A section of the metal frame of the case is given in Fig. 2, at point I K in Fig. 1, in which *p* represents the back plate and *n* the corner bead. In like manner Fig. 3 shows a sectional view of the metal door frame at point L M in Fig. 1.

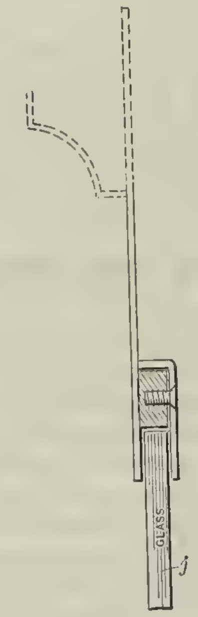
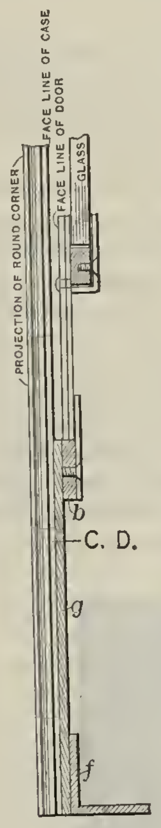


Fig. 5.—Section of End Below Crown Mold.

A section of the metal frame of the case at point A B in Fig. 1 is shown in Fig. 4. It will be noted that Fig. 4 shows a flat bar, ¼ x ½ inch, riveted to plate *a*, to which the bottom of the cornice is securely fastened. On the under side and at the front edge of the top plate is another ¼ x ½ inch flat bar, *r*, to which the top front of the cornice is fastened. At *d* another ¼ x ½ inch flat bar is riveted to the top plate, which, together with the sheet plate *c*, made out of No. 18 gauge sheet steel, forms a construction for holding the glass in position.



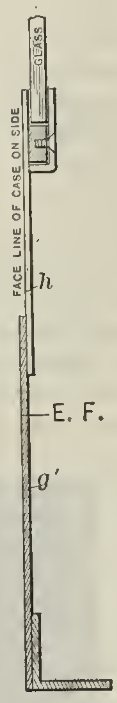


Fig. 6.—Section of Front Bottom. *Fig. 7.—Section of Side Bottom.*

The plate *c* is screwed onto the bar *d*, so as to be easily removed in case at any time the glass should crack or break, making it an easy matter to replace a broken glass.

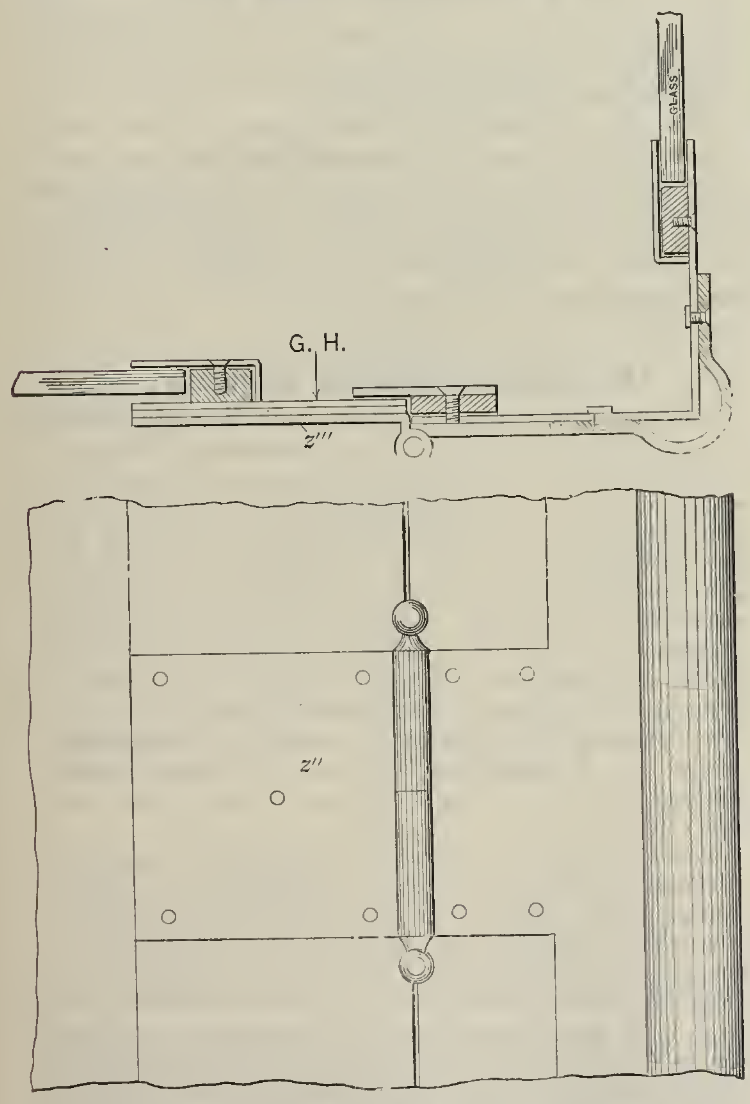


Fig. 8.—Section and Elevation Showing Corner Finish and Hinge.

All methods of holding the glass in position in the various parts of the case are of the same construction, as shown by bar *d* and plate *c*. The pattern for one is a pattern for all as regards size and form. At *b* a 3-16 x ¾ inch flat bar is placed in position between the two No. 16 steel plates, as shown, in order to give the desired recess for the reception of the door at the top and at the same time show a border of ⅛ inch outside the door when closed.

A sectional view of the metal finish on the two ends below the crown mold is given in Fig. 5, as shown from A′ to B′ in Fig. 1, and a section of the metal finish at the bottom of the case in front, as shown by C D in Fig. 1, is given in Fig. 6. The bar *b′* is ⅛ x ¾ inch, and *g* is the base plate, made of No. 10 sheet steel, with an angle iron, *f*, riveted on the inside at the bottom.

The base finish for the two ends is shown in Fig. 7, with the number of steel plate and the same size angle iron as in the front base shown by Fig. 6.

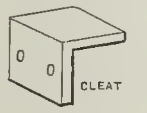


Fig. 9.—Shelf Support Cleat.

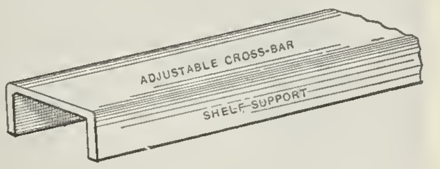


Fig. 10.—Shelf Support Bar.

The sectional view, Fig. 8, shows the frame construction at G H in Fig. 1, with extra heavy bead extending from the crown mold to the floor. In the elevation given in Fig. 8 *z″* shows the face of the hinge, and *z‴* in the sectional view its form and thickness. The cleat shown in Fig. 9 is riveted to the front and back of case at each side, and upon which the cross bar, as shown in Fig. 10, rests to hold the shelves.

A sectional view of shelf and its support is given in Fig. 11. The cleat being the only part of the shelf support that is fastened to the case, the cross bars and shelves can be easily adjusted and taken out when desired. The frames for the doors are made of two thicknesses of sheet steel, No. 10 and No. 16, the No. 10 steel being put on the outside.

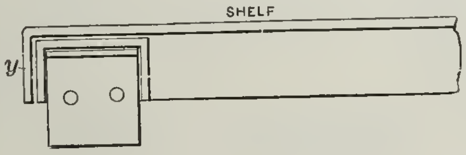


Fig. 11.—Section of Shelf, Support and Cleat.

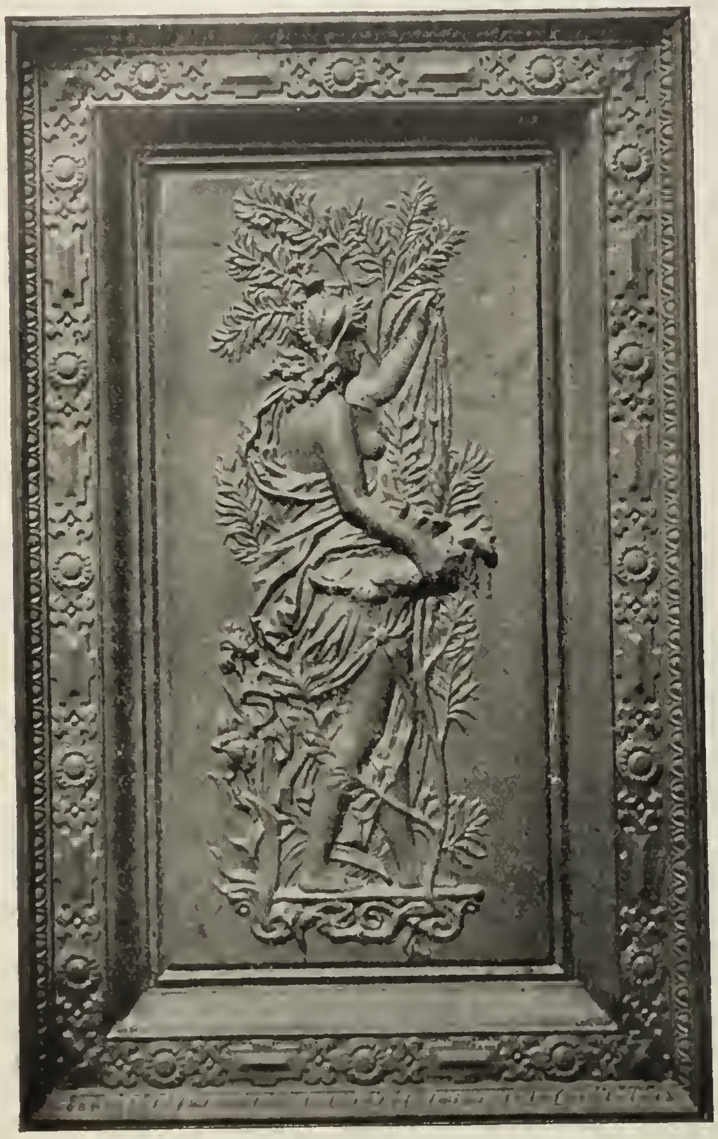
A New Metal Ceiling Catalogue.

W. J. Burton & Co., Detroit, Mich., are distributing their new catalogue "N," covering the line of metal ceilings and side walls, which they are offering in a much larger variety of designs than heretofore. The catalogue is a 112-page publication, 10 x 13½ inches in size, profusely illustrated with excellent half-tone engravings. At the beginning a brief introduction dwells upon the merits of steel ceilings and side walls as a modern substitute for wood and plaster, their durability, fire, water and dust proof and sanitary qualities, combined with their architectural beauty, being cited among the recommendations of this class of goods. Full instructions are given for ordering ceilings, together with directions for applying the same. Among the goods shown are many handsome designs in Romanesque, German Renaissance, Rococo, Colonial, Empire and Gothic styles. The illustrations show ceiling and side wall panels, borders, friezes, moldings, cornice, cornice blocks, wainscoting plates, &c. Some full page views are presented of buildings and halls covered with the company's sheet metal ceilings and side walls. Accompanying the catalogue is a price-list, dated April 11, 1902, covering all the goods shown in the larger publication.

ONE of the new Sheet mills at the Laughlin Nail Company's plant, at Martin's Ferry, Ohio, was started up this week. A second mill will be ready for operation next week.

Decorative Art Metal Plates.

The Penn Metal Ceiling & Roofing Company, Limited, of Hamilton and Twenty-third streets, Philadelphia, Pa., and 14 Harcourt street, Boston, Mass., have just issued an exceptionally handsome catalogue of 172 pages covering their long line of Sagendorph's patent metal sectional ceiling and side wall decorations, suitable for churches, halls, hospitals, asylums, schools, theaters, stores and dwellings of all classes. The present is the twenty-eighth catalogue issued by the firm, each one being more elaborate than its predecessor. It is of a size, 10 x 14 inches, sufficient to effectively show large half-tones of ceilings and side walls in place in a variety of rooms, halls, stores, &c., giving an excellent idea of the decorative possibilities of these materials. The company state in the preface that it is their preference to put up their ceilings in Philadelphia, New York, Boston and vicinity, although they are prepared to furnish competent mechanics and artists to put up their work in any section of the United States when desired.



Decorative Art Metal Plates.—Fig. 1.—Bas Relief Plate. Nymph.

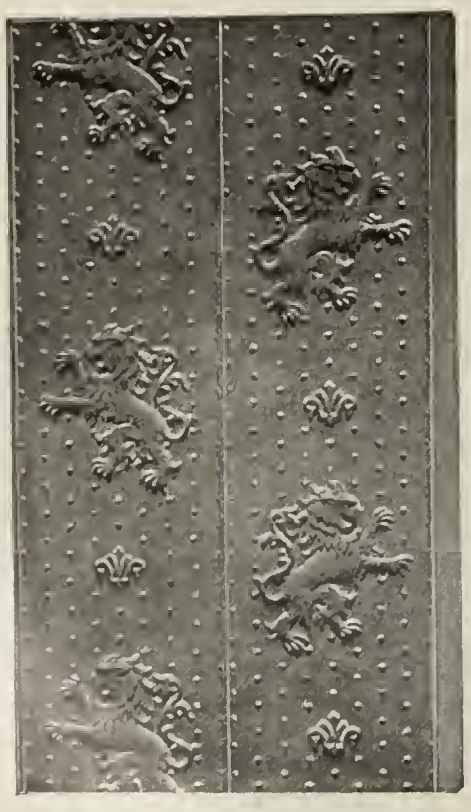


Fig. 2.—Gothic Side Wall Decoration.

At the beginning of the book detailed instructions are given for putting up the steel ceilings and side walls, as well as directions for decorating them, accompanied by diagrams showing the method of application. An immense number of fine half-tone illustrations show the great variety of handsome patterns turned out by the concern, including continuous ceiling or side wall plates, shallow and deep ceiling plates, ceilings and borders in German Renaissance, Empire, Rococo, Colonial, Italian Renaissance and Elizabethan styles, together with borders, friezes, center pieces, wainscoting, coves, moldings, drop blocks. bottom pieces, bases, cornices, brackets, zinc stamped ornaments, ventilating centers and Dado plates. One section of the catalogue is devoted to special *bas relief* plates and frames, many of which are of an exceedingly elaborate character.

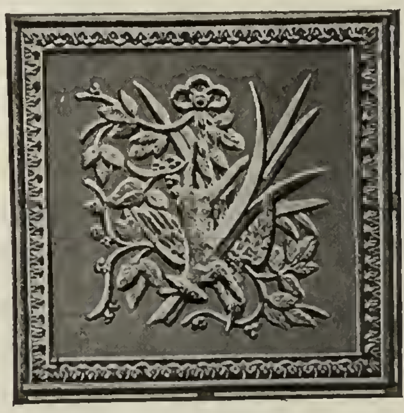


Fig. 3.—Ceiling Plate for Dining Room.

We present herewith a few examples of the company's decorative art metal work. Fig. 1 is a *bas relief* plate representing a nymph, specially designed for the decoration of large halls, hotels, or public buildings. Fig. 2 gives an example of the company's Gothic side wall decoration, and Fig. 3 is shown a specimen of one of their ceiling plates for dining rooms.

The Vulcan Detinning Company.

Announcement is made of the acquisition by a syndicate of the Vulcan Metal Refining Company of Sewaren, N. J., and the Vulcan Western Company of Streetor, Ill., which concerns are engaged in the recovery of tin plate scrap and its conversion into steel scrap and pig tin. The syndicate which has been formed by G. Sidenberg & Kraus, bankers of New York City, will form a new corporation under the name of the Vulcan Detinning Company, under the laws of New Jersey, with a paid up capital of $3,500,000. They will operate the plants at Sewaren and Streator. The Board of Directors of the new company will consist of Samuel R. Beardsley, Joseph B. Bloomingdale, Lyman G. Bloomingdale, Stephen A. Ginna, Meyer Hecht, Adolph Kern and Harry Kraus.

The Vulcan Metal Refining Company were organized in October, 1898, with a capital of $180,000 to utilize a process for the reduction of scrap tin plate that had been successfully employed in similar works in Germany. The process, while covered by patents, of which the American rights were acquired by the Vulcan Company, is in part a secret one. It is electrolytic and similar, in a general way, to the process used for separating copper and other metals. The Sewaren works has a capacity to handle 10,000 tons of scrap a year. A year later, in 1899, a similar reduction plant was erected at Streator, Ill., by the same interests, and a company were incorporated with a capital of $300,000, under the name of the Vulcan Western Company. Both plants have since been operated with entire success.

The American Can Company.

The balance sheet of the American Can Company of Jersey City as of March 31 shows:

Assets.

Plant, real estate, patents, &c.		$75,256,379
Improvements		366,869
Other investment items		1,009,439
Cash		1,075,789
Bills and accounts receivable		1,487,024
Merchandise inventoried at cost		5,841,885
Total		$85,037,385

Liabilities.

Preferred stock	$41,233,300	
Common stock	41,233,300	
		$82,466,600
Mortgages assumed		119,000
Accounts payable		676,221
Surplus		1,775,564
Total		$85,037,385

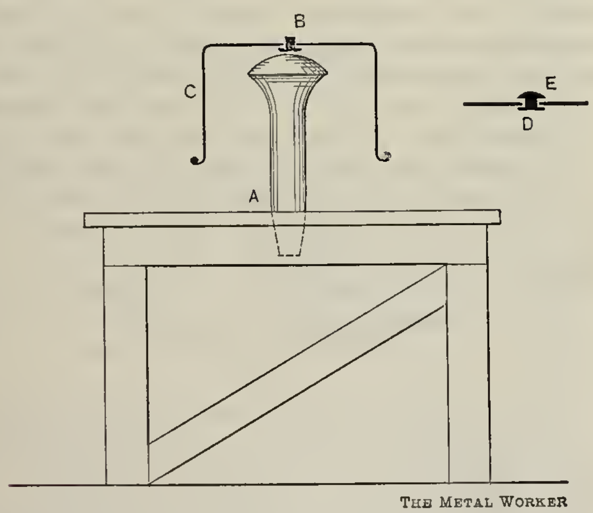
At the stockholders' meeting the following directors were nominated for five years: Warner M. Leeds, George G. McMurtry, L. H. Landon and W. F. Dutton. Vice-President Akin in his report for the year says: "The company have suffered during the past year from the general shortage of crops and particularly from the shortage of the fruit crop. In spite of these unfavorable conditions the company have not only held their trade, but have even increased the volume of business. The contracts and orders now on hand indicate a much larger business than for the past year. The great problem before the company is the concentration of their plants. Much of this has already been done. When these changes have all been made the company can operate at a much less cost than now. The treasurer's report shows the inventory of merchandise at cost, which is conservative. The cost of dismantling plants has been charged direct to the operating expenses." The officers elected at the meeting of the Board of Directors are as follows: President, F. A. Assmann; first vice-president and chairman of the Executive Committee, H. F. Akin; second vice-president, T. G. Cranwell; secretary and assistant treasurer, L. H. Landon; treasurer and auditor, F. S. Wheeler; assistant secretary, W. F. Dutton; second assistant treasurer, R. A. Burger.

HINTS FOR THE TIN SHOP.

The following three hints may prove of some value to the tinsmith who runs a general jobbing shop:

REPAIRING ENAMELED WARE.

In Fig. 1 is shown the method of repairing enameled ware. A leak in this ware is difficult to solder. It may be repaired, however, by opening the leak hole with a small reamer to the size of a 1-pound soft tinned rivet. Then place a rivet, B, on the round headed stake A, and put the vessel C over the rivet where required. The rivet should then be spread with the hammer, as shown by D, setting it down well with the rivet set, as at E. If a soft rivet is used the opening in the vessel will become perfectly tight without any soldering.



Hints for the Tin Shop.—Fig. 1.—Repairing Enameled Ware.

A SOLDERING TROUGH.

In Fig. 2 is shown a wooden trough used for soldering leaders or pipes. This trough is made of ¾ x 6 inch stuff, 10 feet long, with standards fastened or nailed to the bottom, as shown by A, B and C. It is used as follows: When the pipes are all grooved or riveted together in 24, 30 or 36 inch long joints, one end of each joint is crimped, and the joints put together in one length of 10 feet. The joints are first tacked with solder on both sides, then the trough is raised a little higher on one end to allow the solder to flow when soldering. In diagram D is shown the leader E in position.

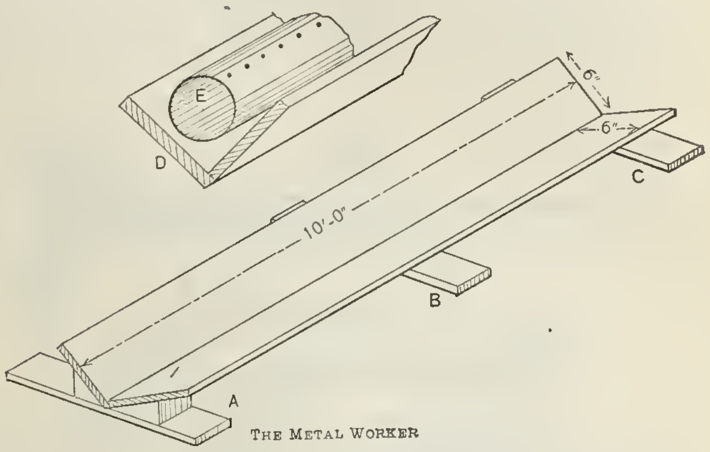


Fig. 2.—Trough for Soldering Leaders or Pipes.

FIRE POTS.

No doubt many tinners have experienced trouble while working on new jobs by having hot coals fall out of their fire pot when taking out a soldering copper. This is very apt to occur in the ordinary fire pot shown in Fig. 3, where, as above mentioned, when taking the coppers out at A hot coals fall onto the wood sheathing, and if no precaution is taken on a windy day are apt to cause some expensive damage. This can be avoided by putting a safety pan under the soldering copper support C in Fig. 4, as shown by A, with a ledge bent around the three sides, as shown by B. Then if any hot coals should fall out they will be caught in the pan A and much danger and trouble avoided.

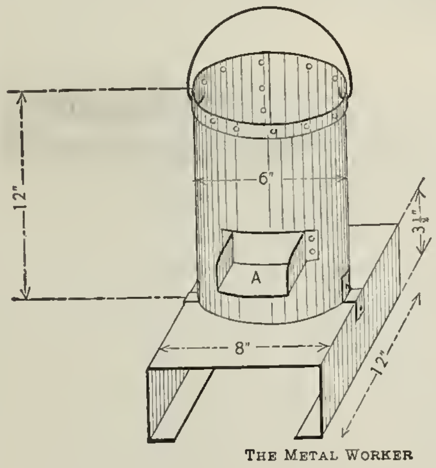


Fig. 3.—The Ordinary Fire Pot.

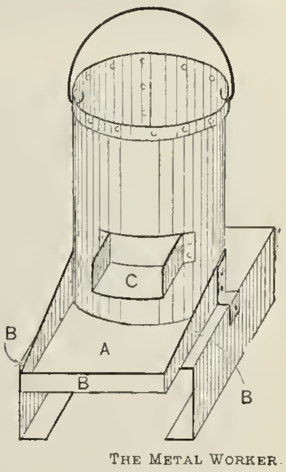


Fig. 4.—Pot with Safety Pan.

Amalgamated Association Wage Committees.

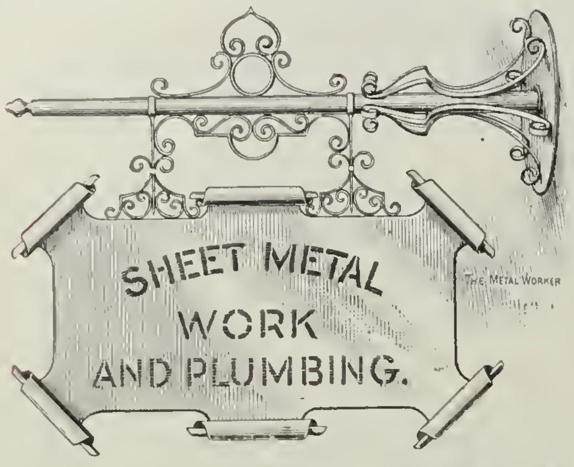
The following Wage Committees of the Amalgamated Association of Iron, Steel and Tin Workers were appointed last week by President Shaffer, at the convention of the association, at Wheeling, W. Va.:

Tin Plate: John Chappell, James Sadler, New Castle, Pa.; W. G. Price, New Kensington, Pa.; Walter Larkin, T. J. Davies, Martins Ferry, Ohio; Clem Jarvis, Anderson, Ind.; John Quinn, Granite City, Ill.; Wm. O'Brien, Elmwood, Ind.; Chas. Williams, Waynesburg, Pa.; W. H. Evans, Jr., Middletown, Ind.; John Owens, New Castle, Pa.

Sheet: John Ridd, Newport, Ky.; John G. Hagan, Piqua, Ohio; Otto Sellers. Muncie, Ind.; Charles James, H. J. Cecil, Martins Ferry, Ohio; Thomas Fox, Wheeling, W. Va.; H. J. Carson, Canton, Ohio; George W. Davis, Cambridge, Ohio.

MAKING SCROLL SIGNS.

In working out sheet metal signs, as is shown in Fig. 1, a neat effect is obtained by placing scrolls at the top, bottom and corners. The scroll must be laid out in the flat correctly so that, when rolled up, it will have the proper appearance. In Fig. 2 is shown how this can be accomplished. Let A B C D represent the flat surface of one corner of the sign on which a scroll is desired, as shown in Fig. 1. In practice, the section is first laid out, from which the elevation is projected as follows: In its proper position draw the desired section of the scroll, as shown by the small figures 1 to 12 in the elevation in Fig. 2. Directly in line with the elevation draw a duplicate of A B C D, as shown by A^1 B^1 C^1 D^1. Now divide the section of the scroll into any number of desired spaces, as shown from 1 to 12, the spaces from points 8 to 12 being smaller, because the curve is also smaller. At right angles to A^1 B^1 draw the line F G, upon which, starting from the line A^1 B^1, place the stretchout of the scroll, as shown from points 1′ to 12′. At right angles to F G draw the line 12′ I and 12′ H, equal to the desired width at the end of the scroll. Then from I and H draw free hand curves to B^1 and A^1 respectively, as shown. Then will H I B^1 A^1 be the pattern for the corner scroll.



Making Scroll Signs.—Fig. 1.—A Finished Sign.

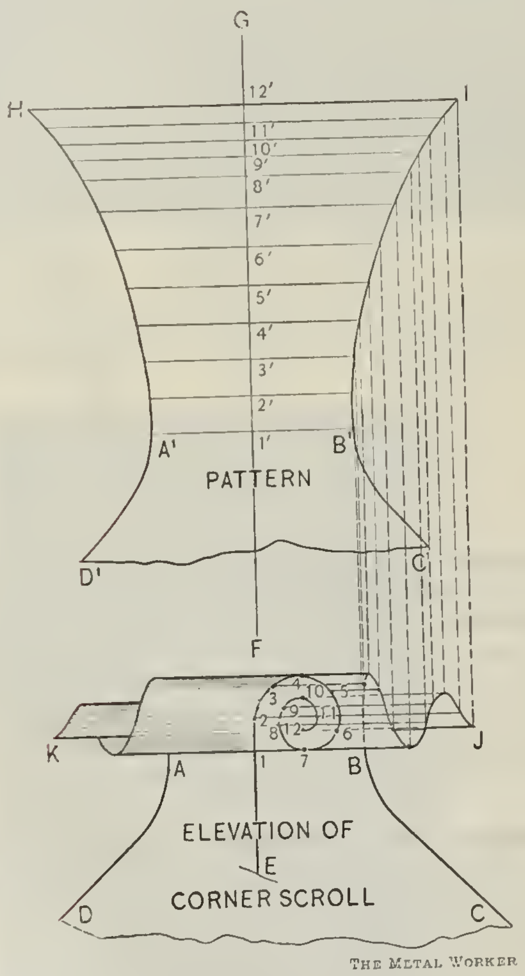
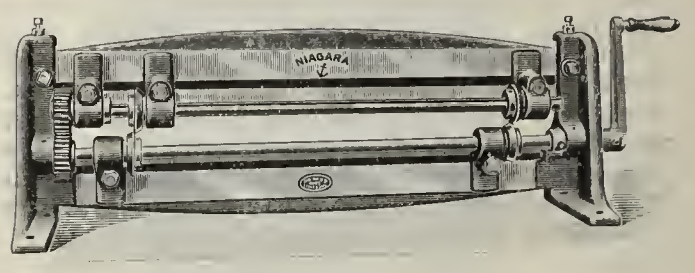


Fig. 2.—Elevation and Pattern.

If it is desired to know how this scroll will look when rolled up, then, at right angles to F G and through the intersections 1′ to 12′, draw lines intersecting the curves I B^1 and A^1 H. From these intersections, shown on one side only, drop lines intersecting similar numbered lines drawn from the intersections in the profile of the scroll in elevation parallel to A B. Trace a line through the points thus obtained, as shown by B J and A K, which gives the projections at the ends of the scroll when rolled up.

Duplex Rotary Slitting Shears.

In the accompanying illustration is shown the new Duplex rotary slitting shears, manufactured by the Niagara Machine & Tool Works, Buffalo, N. Y. This machine is intended for cutting apart sheets of any length, of No. 24 gauge and lighter and up to 30 inches wide. The cutters are carried by holders that are fastened to the upper and lower part of the frame, independent of the shafts. The distance between the cutters can be adjusted from 3½ to 30½ inches. The machine will answer for trimming sheets up to 30 inches wide, or for dividing a sheet into two or three strips. The cross head for carrying the upper cutters can be lowered to permit of taking up wear on the cutters. This machine is intended to be sunk into a bench with the upper surface of the lower cutter flush with the surface of the bench. At right angles to the machine gauges can be provided according to the work in hand.



Duplex Rotary Slitting Shears.

FLASHINGS.

A SIXTH MILL has been added to the Carnahan Tin Plate & Sheet Company's plant, at Canton, Ohio. About 400 men are now employed in the various departments of the Carnahan plant, and the number will be increased before long to 600.

GEORGE C. KEENE & Co. of Cincinnati, Ohio, manufacturers of Sheet Metal Working Machinery, who have been for many years located in what is known as the "Bottoms" district of the city, have been compelled, owing to their rapidly increasing business, to seek larger quarters; and have secured a piece of ground adjoining the old power house of the Walnut Hills cable road, upon which they will at once begin the erection of a new plant, 80 x 70 x 88 feet, part one story and part two stories. The new building will be provided with the latest and most improved machines and equipment, including traveling cranes, &c. A gas engine will supply power for the machinery. The new works will be completed within 90 days.

Two more Sheet mills are to be added to the Falcon plant of the American Sheet Steel Company, at Niles, Ohio.

IN a recent number of *Finance* of Cleveland, Ohio, is presented a full description, with illustrations, of the large plant of the Berger Mfg. Company, at Canton, Ohio, together with a history of the concern showing their remarkable growth, since their establishment in a modest way in 1886, until the attainment of their present position as one of the leading industrial enterprises of Canton.

THE UNITED STATES COLD ROLLED STEEL & MFG. COMPANY, with principal office at 800 Broad street, Newark, N. J., have been incorporated with a capital of $100,000 by Theo. Wagner, Geo. G. Aeschbach and Otto Aeschbach. The object of the company is the rolling of Metals.

The American Tin Plate Company have placed an order with the Bass Foundry & Machine Company of Fort Wayne, Ind., for the installation of a 2500 horsepower Corliss engine at their plant at Elwood, Ind. The engine will have a fly wheel weighing nearly 70 tons.

The American Tin Plate Company have obtained a temporary injunction in the United States Court at Covington, Ky., against the Licking Rolling Mill Company of that city, restraining them from using the letters "M. F. H." on certain brands of Tin Roofing. The plaintiff claimed that the use of these letter constituted an infringement upon their property rights. The case will come up for argument at the next term of court.

F. H. Dawson, Williamson, W. Va., is desirous of learning the present whereabouts of F. M. Duley, a tinner and cornice maker.

The third annual meeting, election of officers and banquet of the Master Tin Roofers' and Metal Workers' Association of Troy, N. Y., will be held on Wednesday evening, May 7, at 273 River street, Troy. The committee in charge, consisting of David White, chairman; Leo Rivers, James M. McCoubrey, Harry Packard and F. T. Ham, have made arrangements which promise that this will be one of the most enjoyable affairs the association has yet had. It is hoped and expected that every member will be present. James Hamil is president of the association and Fred. T. Ham the secretary.

The business with South Africa has been picking up. During the first three months of the current year 16,000 tons of Galvanized Sheets were exported from Great Britain, against 4000 tons during the corresponding period of last year.

Some extensive improvements are to be made at the Old Meadow works of the American Sheet Steel Company at Scottdale, Pa. The improvements consist in labor saving devices and an increased output. Electric power is to be introduced in many of the departments where steam has been used, and the plant is to be modernized.

The citizens of Worthington, Ind., are actively at work planning to secure new manufacturing enterprises. They have in view a Tin Plate and Sheet Steel plant, the projectors of which are seeking a location. A fund is being raised for the payment of bonuses on this and other projects.

The Lalance & Grosjean Mfg. Company of New York City are sending to their customers a pair of pictures neatly framed in black wood, giving views of their rolling mills at Harrisburg, Pa., and their large factory at Woodhaven, L. I. These pictures convey a good idea of the magnitude of the plants owned and operated by the company.

The Conklin Tin Plate & Metal Company of Atlanta, Ga., have been incorporated with a capital stock of $60,000 by J. T. Pendleton, Charles A. Conklin and John N. Goddard.

The Southern Roofing Company of Louisville, Ky., have been incorporated with a capital stock of $1500 by C. A. Monks, C. H. Carter and John C. Zulauf.

Trade School of the Massachusetts Charitable Mechanic Association.

The trade school established in October, 1900, by the Executive Committee of the Massachusetts Charitable Mechanic Association has just completed its second term. The school opened on October 14, 1901, and closed on April 11, 1902. During that time classes were held in bricklaying, plumbing and carpentry, on every Monday, Wednesday and Friday evening of the week, from 7.30 to 9.30 o'clock. We are advised by Secretary Alfred Bicknell that the classes in bricklaying and plumbing were fully attended, but the class in carpentry did not secure a full list of pupils. Many of the plumbing class were already plumbers' helpers. A number of the pupils have been graduated, receiving diplomas of competence after proper examination. The good progress made by the students during the term gives the committee the assurance that in a school of this kind a young man in good health, with perseverance, determination and good personal habits, can become possessed of a competent working knowledge of a trade.

Pupils who desire to enter must be over 16 years old, and must bring recommendation of their being of good habits and behavior. No one is admitted except for the full term. The tuition fee is $15, of which $8 must be paid in advance, and the balance on January 1. Blank forms for admission will be sent on application to Alfred Bicknell, secretary, Mechanics' Building, 111 Huntington street, Boston, Mass. The Executive Committee contemplate the gradual addition to the school of certain other trades until they have a full course of instruction in all the building trades, with possibly some others. The charge for tuition brings in about half of the cost of light, heat, materials and instructors.

The Waggoner Watchman Clock.

An improved electric clock for the purpose of recording the visit of a watchman to the different parts of the premises is manufactured by the Waggoner Watchman Clock Company, Grand Rapids, Mich. This clock has been on the market for a comparatively short time, but a large number are now in use. It has a unique method of registration. It prints the record on the back of the dial by means of a vibrator actuated by an electric current. Ordinary push buttons are used to make the contact, thus avoiding the use of keys, which may be lost or tampered with. The registration is entirely secret, the vibrators printing on the back of the dial by means of a typewriter ribbon. The time of the registration can be clearly seen when the dial is held to the light. The dial cannot be stopped through any manipulation of the wires or push buttons, and if the clock is short circuited a black line is printed on the back of the dial, showing the time and at what station the wires were tampered with.

The secret registration on the back of the dial is claimed to be a positive protection against the manipulation of the clock, for the reason that the arrangement of the stations cannot be ascertained except by reading the dial after its removal. Further than this, the arrangement of the stations can be easily altered by shifting the connections of the various vibrators should such a change be desired for any reason. Should an attempt be made to open the door of the clock with a duplicate key, a knife arrangement in the top of the clock cuts the edge of the dial and shows that the clock has been opened by some unauthorized person. The clock door may even be left unlocked, as the fact of this being opened will be shown on the dial. While the dials used are special, as regards the quality of the paper, any dial of the proper size and quality may be used. They are simple in design, and one can be ruled up with a lead pencil, if necessary, or in case of the shortage of dials one could stay on the clock a week and the watchman not know it.

An addition to the service of a clock of this kind is in the alarm adjustment which is furnished only in the Waggoner clock. If the watchman does not register within ten minutes of the time for starting his rounds an auxiliary connection moving with the dial closes the circuit and rings a gong in the building to be watched, at the same time sounding an alarm in the house of an official residing near the factory or building. The alarm will ring until the clock is registered. This attachment is entirely automatic. Another feature which can be added to the protective service of the clock is a fire alarm to be operated by thermostats placed at any desired point about the buildings. The alarm being sounded gives the watchman prompt notice of a fire. These clocks are made in three regular sizes, No. 1 being intended for four stations or less, No. 2 up to ten stations and No. 3 up to 14 stations.

According to the Treasury Department report the amount of money in circulation in the United States on April 1 was $2,252,047,357, making a per capita circulation of $28.59 for each man, woman and child in the country.

DEATH OF B. FRANK HOOPER.

The death of B. Frank Hooper, president of the Colwell Lead Company of 63 Centre street, New York, which occurred suddenly at 11 o'clock on Sunday evening, April 20, was a severe shock to his many friends and business associates in and outside of the plumbing supply trade. He was one of the best known and best liked men in the business and, owing to the various interests with which he was connected, was acquainted with the members of the plumbing supply trade all over the United States and Canada.

Mr. Hooper's death was entirely unexpected. He had been ailing for some time past, and had suffered considerably with an affection of his left foot, but his illness was not of sufficient importance at any time to keep him away from his office, or from transacting business on behalf of the various associations with which he was connected.

B. FRANK HOOPER.

On Friday of last week he attended several important meetings, and was at his office until 6 p.m. On Saturday morning he was indisposed, and did not go to his office, but, acting on the advice of his physician, he went driving in the afternoon. On Sunday afternoon he had been out walking, and was, apparently, in very good health. That night he felt sufficiently well to dine with an aunt, who he was anxious to see before his departure for Europe, returning to his home about 9 o'clock. About 10 o'clock he complained of feeling unwell, and told his wife that something he had eaten had disagreed with him. After preparing himself to retire, during which time he had a severe fit of coughing, which left him very weak, he sat upon the side of his bed, His wife, thinking he needed help, went to him and placed her arms about his shoulders. She spoke to him, only to receive no answer. Immediately divining that something must be wrong with him, she felt his pulse to find that life was extinct. Thus passed away one of the best known and most highly esteemed representatives of the business interests of New York City.

Benjamin Franklin Hooper was born in New York City on June 30, 1857. He was a son of John and Angelina H. Hooper. His father, who preceded him as president of the Colwell Lead Company, and who died in 1889, was an old stockholder of the New York *Tribune* and a business associate of Horace Greeley. He attended West Point in the class with Jackson and Beauregard. Later he held office in several important corporations, and was a member of the New York Board of Education and founder of the North River Savings Bank of New York. Upon his death he presented two fountains to the city, and bequeathed $150,000 to various charities. His paternal grandmother was a daughter of John Horton, in whose house General Putnam slept just previous to being chased by the Hessians, from whom he escaped by making his famous leap.

B. Frank Hooper received his early education in New York private schools, where he was fitted for college, and in 1878 was graduated from the College of the City of New York with high honors. In September of the same year he entered the Colwell Lead Company, of which his father was the president, and steadily advanced in position until, in 1889, upon the death of his father, he was elected president. This office he held until the time of his death. Mr. Hooper was also president of the Independent Foundry Company of Port Chester, N. Y.; president of the Manufacturers' and Dealers' Protective Association; vice-president of the Association of Manufacturers and Jobbers of Plumbers' Supplies, and treasurer of the National Committee of the Confederated Supply Associations, and also held the leading interest in the American Sanitary Company of Elizabeth, N. J. He was a member of the Colonial, Hardware, Fulton, New York Athletic and City College clubs, the Chamber of Commerce, the New England Society, St. John's Lodge, F. & A. M., and the American Yacht, Larchmont Yacht, West Side Republican and National Arts clubs, besides being upon various Advisory and Executive committees in the different associations with which he was connected. He was a director of the Central Park Improvement Company.

In 1888 Mr. Hooper married Edith May, daughter of Alva S. Walker, who is vice-president of the Colwell Lead Company, and proprietor of the Hotel Beresford, New York City. Mr. Hooper leaves a widow and four children, Stanley, Walker, Emily May and Grace Duncan.

The funeral service was held in the Church of the Divine Paternity, Seventy-sixth street and Central Park West, on Wednesday evening. The Rev. Dr. Clark of Boston, Mass., who officiated when Mr. and Mrs. Hooper were married 14 years ago, delivered the eulogy and pronounced the benediction. Handsome floral pieces were sent by the National Committee of the Confederated Supply Associations, the Association of Manufacturers and Jobbers of the United States, the officers and employees of the Colwell Lead Company and of the Independent Foundry Company, George L. Knox, Francis J. Torrance and many others.

Among those in the trade who were present at the services were Carleton W. Nason and Frank A. Bucknam of the Nason Mfg. Company; Frank Knox of Hartford, Conn.; Mr. Bampton of the Chadwick-Boston Lead Company, Boston, Mass.; Wm. B. Maddock of John Maddock & Sons, Trenton, N. J.; G. C. Ainslee of Chambers & Ainslee, Newark, N. J.; John H. Meuller of Port Chester, N. Y.; Wm. Trageser of the John Trageser Steam Copper Works, Martin D. Fink and Otis K. Dimock of Dimock & Fink Company, Erastus E. Haff and Mr. Blauvelt of the F. N. Du Bois Company, Clarence H. Rose, Henry Stein, Fred D. Hussey of W. H. Hussey & Son, H. P. Read and Clifton Driggs of the H. P. Read Lead Works, John A. Murray, Wm. Murray, Harry M. Smith of C. S. Locke & Smith, William McShane, Thomas G. Knight, Rudolph Eggelstrom, R. E. Carey, James F. Conran of the Standard Sanitary Mfg. Company, Chas. W. Woodward of the National Committee of the Confederated Supply Associations, Leffert Lefferts, Louis F. Merlan of Mayor, Lane & Co., John A. Lefferts of the American Sanitary Company, W. E. Campbell of the Campbell Supply Company, Thomas Leahy and

Frank Reynolds of M. Reynolds Plumbing Supply Company, Wm. Naylor, W. R. Campbell, Robert H. Hoile, Daniel L. Daub, Oscar A. Knapp, John J. Carroll, R. McWilliams, C. C. Tracy, Wm. Tracy, Frank P. Richardson, A. M. Drake and upward of 50 other employees of the Colwell Lead Company. The interment was made on Thursday morning in the family plot in Greenwood Cemetery, Brooklyn, the services at the grave being of a Masonic character.

Gorton Boilers in the Yale Club Building.

Architects, heating engineers and others will be interested in the heating plant of the Yale Club Building, 30-32 West Forty-fourth street, New York City. Aside from the very satisfactory results that have been obtained since its installation something over a year ago, the equipment is of interest from the fact that steam is furnished to cook with in the club kitchen as well as to heat the large 11-story building, the temperature of which has been maintained at 70 degrees, even during the severely cold days of the past winter. The boiler room is situated below the sidewalk and is equipped with a battery of three Gorton side feed steam boilers of the latest pattern, manufactured by the Gorton & Lidgerwood Company of New York City, consisting of one No. 36 and two No. 38 boilers.

The building is an imposing structure and of the highest class of construction throughout. Tracy & Swartwout of New York City are the architects. It is heated by two-pipe system, which was put in by Baker, Smith & Co. of New York City, after plans of A. R. Wolff, consulting engineer. The two No. 38 boilers have been found more than sufficient for heating the building. Steam will circulate under 3 pounds pressure, and only on the coldest nights has it been necessary to carry more than this.

The boilers furnish steam for 168 radiators and 18 coils, aggregating 5470 square feet of radiating surface, distributed throughout the 11 stories, including basement and roof. Two tanks, holding together about 10,000 gallons of water, used for various purposes throughout the building, are kept from freezing by steam from the heating boilers, which is supplied to coils suspended along one side of the room under the roof in which the tanks are located.

The kitchen, which is on the top floor, is supplied with steam for the cooking kettles from the No. 36 boiler, carrying about 40 pounds. This boiler is licensed to carry 75 pounds, being tested up to 125 pounds water pressure by the Fidelity & Casualty Company. Steam is also furnished by this boiler to the pantry for warming dishes, making coffee, &c., and keeping soups and various other foods warm. The experience with the system for nearly two years in which it has been in use has been highly satisfactory.

The engineer in charge of the plant reports the Gorton side feed boilers as very economical and exceptionally rapid steamers. Even on the coldest days no difficulty has been experienced in getting steam up to 40 pounds in 17 minutes, and it has only been necessary to coal up twice in 24 hours. Ease of management is a noticeable characteristic of the Gorton boilers. They require very little attention. When it is considered that the engineer in charge of the three boilers at the Yale Club has also to care for the entire electrical plant and other power equipment of the building, as well as the plumbing, it will be seen that but little time can, of necessity, be given to attending the heating plant.

To sum up, the experience of nearly two years has shown that the system of heating employed at the Yale Club Building is very economical in the use of fuel, extremely easy to care for and most satisfactory in every way in results obtained. It is suggested as a most satisfactory equipment for hotels, club houses and restaurants where cooking by steam is desirable in connection with the usual heating of the premises. We are advised that a number of Gorton side feed boilers have been used for such purposes with entire satisfaction.

T. P. Frantz will receive bids until May 1 for a steam heating plant for St. John's Reformed Church, at Lebanon, Pa.

AN INTERESTING INCIDENT IN THE PITTSBURGH PLUMBING TRADE.

Commendable efforts to prevent their trade from suffering the evil of competition endured by the grocers and some other tradesmen are being earnestly made by the master plumbers in different sections, and various plans have been devised for perfecting the excellent protection which this trade now enjoys. It is not surprising that all the methods adopted fail to meet the approval of their supply brethren, but if honest effort is made to reach an agreement that will be at least practicable and equally beneficial to all interests the spirit of the effort will prevail, even should the details be radically changed.

There are certain lines within which all trade agreements must be kept if the provisions of the statutes for the public protection are to be avoided, and both parties to an agreement must take cognizance of this before a lasting arrangement can be effected. The character of some of the papers prepared by master plumbers for the consideration of the supply trade is reflected in the correspondence recently exchanged in the Pittsburgh trade. Under date of April 9 the Master Plumbers' Association of Pittsburgh, Pa., sent the following letter to the supply trade:

Gentlemen: Your attention is respectfully called to the following resolutions:

Resolved, That all names appearing on the official list presented by the Master Plumbers' Association are the only ones recognized as regularly engaged in the plumbing business.

Resolved, That in the event of any person or persons, firm or corporation desiring to purchase goods or engage in the plumbing business from a jobber or supply dealer, that the secretary of the Master Plumbers' Association be notified, and that an answer be furnished to the said jobber or supply dealer within one week from the day of notification, whether said person or persons, firm or corporation be added to the official list, a notification to be sent at the same time to the secretary of the Pittsburgh Credit Bureau.

Resolved, That the Master Plumbers' Association reserve the right to revise the official list as circumstances may warrant.

After giving due consideration to the resolutions the manufacturers and supply houses were a unit in their opposition to a favorable consideration, and instructed their secretary to send the following letter:

Secretary of the Master Plumbers' Association.

Dear Sir: Answering yours of the 9th instant, I am authorized by the members of the Pittsburgh Credit Bureau to notify you that we will not be governed by your resolutions, as we are now working under the Chicago Resolutions, a copy of which is herewith inclosed.

This correspondence was completed previous to the annual convention of the Pennsylvania Master Plumbers' Association, which expressed by vote approval of the Cleveland Resolutions.

The National Supply Company.

The National Supply Company, Baltimore, Md., have recently added a brass goods department to their plant. A preliminary list which they issue represents principally the season goods which they are starting on, such as National spray hose nozzles, polished hose nozzles, hose couplings and compression bibs, and stops for iron pipe. In this line the company are expecting to add from time to time large assortments of such goods as will be in demand by hardware and plumbers' supply houses. They also call attention to the Murphy improved trucks for all purposes, which they manufacture, and the Protector woven steel covered hose, which they handle, as lines in which they are doing not only a large domestic business, but also exporting in good quantities. The company also make a line of furniture casters, and are, of course, old manufacturers of bolts, nuts and rivets, having succeeded the Maryland Bolt & Nut Company some years since. They state that business in all their departments for the past year or more has exceeded their capacity, and that they keep their plant right up to date by constantly adding labor saving devices, by which they cheapen the cost of their products while at the same time maintaining their quality.

Sewer Connections to Cesspools.

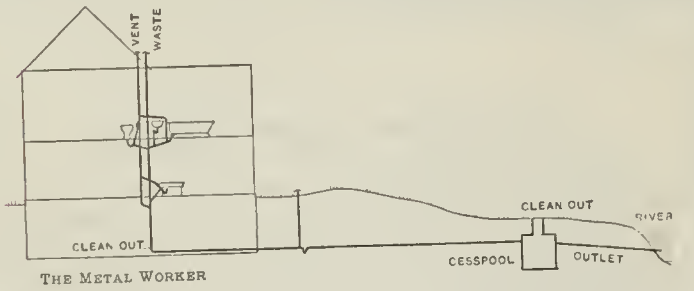
In certain sections of this country cesspools, surface drainage and streams are still used to dispose of the waste from plumbing systems installed in buildings. With a view to learning something of the arrangement of a house drainage system under such conditions, inquiries were made which elicited the following communications from members of the plumbing trade:

A correspondent at Hoquiam, Wash., says:

"There are no regular sewers in this city, which is built on a tide flat. The sewage is carried off in wooden boxes or troughs to the river. A number of such box troughs run through the town site. Originally the main street had a surface sewer with plank sides but without any bottom, and it can readily be imagined what kind of a sewer this made. It has recently been replaced with a closed box. My own residence has a perfect system of plumbing, which drains into a cesspool with an overflow to a nearby stream or slough, as shown in Fig. 1. The intercepting trap with fresh air inlet is located outside of the building and shuts off the odor from the cesspool. It is fixed in such a manner that if the soil pipe, which receives the waste from two closets, one sink, a bathtub, a lavatory and a slop hopper, should at any time become stopped up through accumulation of grease or other matter, it can be cleared from the fresh air inlet by simply working an old style plunger up and down in a short piece of pipe which is calked into the trap. The fresh air inlet has a removable, ventilating cap. This system has been in use for nearly ten years without causing me any trouble, while providing satisfactory ventilation. All of the fixtures of the building are vented through the roof and all the vent and drain pipes arranged in the most approved manner. All of the workmanship has been carefully made perfect, and there is not the slightest odor from any of the fixtures or the piping. My house is the only house in Hoquiam that has a ventilating system and a running trap."

A correspondent at Perry, Ia., writes:

"Unfortunately we have no system of sewerage and are compelled to use private drains and cesspools, and the first question that confronts us is the outlet and the amount of fall which we can secure. After this is obtained we have a basis to work on. To obtain the fall I have a long, accurate level and I use it to sight between the high and low points for distances less than 40 feet with the most gratifying results. The standard pitch for house drains here is ½ inch to the foot. I always try to secure that much and would prefer it to either more or less, even should I be compelled at the end to make a vertical drop. However, I recall one job where I laid 100 feet of 4-inch extra heavy cast iron soil pipe, calked with lead, at a pitch of ¼ inch per foot, that has been in use for five or six years and has never given any trouble. Cast iron pipe is easier laid than glazed terra cotta sewer pipe, particularly when the fall is slight, but I believe that glazed terra cotta sewer pipe is just as good for the outside of buildings, and more durable, at a less cost. I never use anything but extra heavy cast iron soil pipe in, under or nearer to a building than 3 feet from the wall.



Sewer Connections to Cesspools.—Fig. 1.—A Pacific Coast System.

"As to the use of the intercepting trap, I have no fixed rule. With that, like a good many other things in the plumbing business, the location should be governed by good judgment, influenced by the location of the building and the use to which the building is put by the persons occupying it. Sometimes it is located on the inside of the wall, but more often on the outside (as shown in Fig. 2), with the fresh air inlet extending 3 feet above the ground. This arrangement protects the seal of the intercepting trap when it is used, and allows a free circulation of air through the house drainage system. There is no danger of the trap losing its seal from evaporation, as the condensation of the moisture in the air when the building is not used, or the frequent flow of water through it when it is in use, keeps the trap well sealed. If this trap is found empty, a plumber should be called in to see what the trouble is and apply a remedy. I am of the opinion that where an owner refuses to make repairs to a plumbing system in a building, and the defects might have effect on the health of the occupants, the city authorities should order the repairs made and pay for them, charging the expense against the building, to be collected by the proper authorities. If the wall through which the house drain pipe passes is a substantial one there need be no fear about settling at the point where it passes through, though I have seen some walls that it would be dangerous to cut through, and if they should settle and break the pipe, the fault should be traced to its proper source."

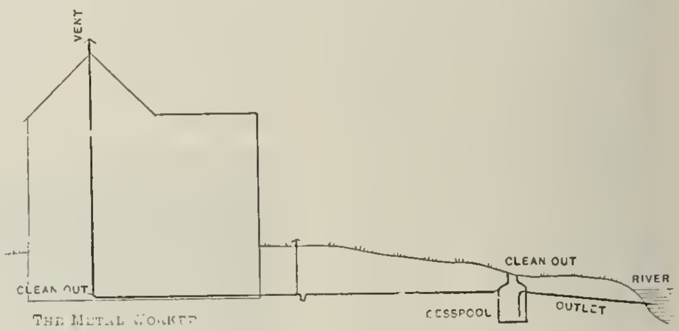


Fig. 2.—An Iowa System.

A New Orleans correspondent states:

"We are now having a system of sewers and drainage canals laid out in our city to drain to a low point, where pumping stations are to be located to throw it where it will eventually find its way to the Gulf. It has been customary, where a plumbing system was used in a building, to allow the refuse to pass to cesspools and vaults for closets and urinals, and the waste from lavatories, bathtubs, kitchen sinks, &c., was allowed to run to the gutter or drain pipe laid on each side of the street. These drain to the suburbs and the refuse is carried to canals outside of the city and thence into the lake. This, however, is to be done away with, owing to the detrimental effect upon the public health.

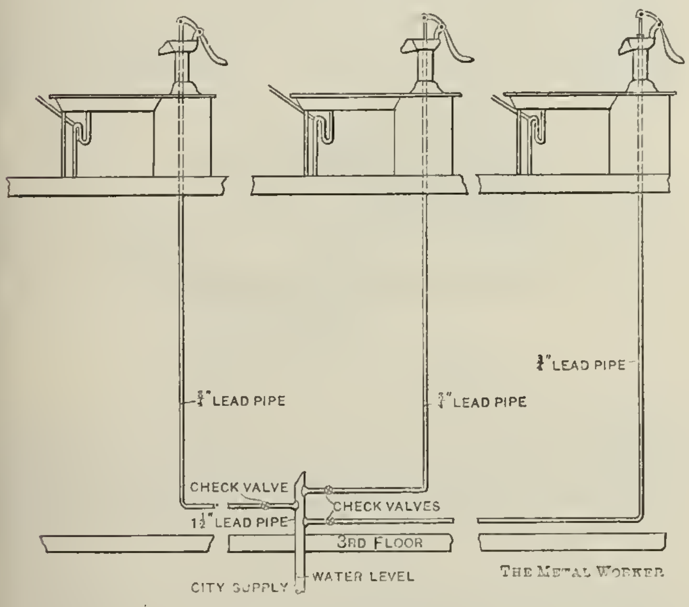
"When the new system of sewers is ready for use, I shall recommend my customers to use the intercepting trap and connect the house drain with the sewer at a point fully 1 foot above the ordinary water level in the sewer. A fresh air inlet and a vent line to the top of the house should be provided, and these should be large enough to allow air to blow in freely from the roof to fill the space behind a rushing slug of water discharging through the waste pipe from some fixture and to flow freely out of the fresh air inlet ahead of this slug of water; otherwise a tendency toward vacuum will siphon some trap or a pressure will force the seal of another. The vent pipe should be carried high enough above the building so that the air which rises through it will be incapable of harm by dilution before it can enter the building. I favor the use of extra heavy cast iron soil pipe, calked with oakum and then lead. If terra cotta pipe is to be used it should be glazed pipe by all means, and it should be laid with a pitch of at least ¼ inch to the foot, but should never be used inside of the building or nearer to it than 3 feet at least.

THOSE manufacturers who make Stoves and Ranges using water backs requiring brass couplings are invited by Rollin C. Wilson, 116 Nassau street, New York, to correspond with him in reference to a special line of these goods which he is offering. These goods are made of high grade metal, and are of neat design and of sufficient weight to stand all the strain of making these connections.

A MULTIPLE PUMP CONNECTION.

BY D. F. N.

The owner of a large private dwelling in New York finding difficulty in getting a tenant for his property, owing to the large office buildings and apartment hotels being built up in the neighborhood, remodeled his building, dividing it up into bachelor quarters of one or two rooms. This required some change in the plumbing, and he put a sink in each set of apartments. When this was done he found that during the day time the water pressure in the street main was not sufficient to raise water above the third story. This was due to the large pumps in the new buildings reducing the pressure in the street mains. Not wishing to go to the expense of a tank on the roof or a pump in the basement, he called upon his plumber to devise some method of supplying water. The plumber suggested putting a hand pitcher pump at each sink and cutting off the 1½-inch lead riser at the third floor, where the water was always found. The end of the 1½-inch pipe was closed and ¾-inch branches were taken from it, as shown in the sketch herewith, to serve as suction pipes for the pumps. After charging each of the pumps and the valves becoming soaked they worked for a short time, but soon began to give trouble. Now and then a small supply of water could be secured; then the supply would stop, when the plumber was again sent for. One of the pumps was set in brisk operation and he discovered that the pump in action was drawing air from the other two pumps. He explained this to the owner and stated that it would be necessary to cut each suction pipe and locate a check valve, as shown in the sketch. When this was done there was no difficulty in securing all the water necessary with very little exertion. The reason that this arrangement has proved satisfactory is that there is always a body of water above the check valve to keep it closed, and the operation of any of the pumps has the effect of pulling the check valve closed tighter, and preventing any air from entering to break the action of the pump.



A Multiple Pump Connection.

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The Bartlett Sanitary Boiler.

Charles F. Bartlett, Tenth and Filbert streets, Philadelphia, has sent us a circular showing the London Kitchener range, which is of the steel construction type and equipped with all the modern conveniences. A feature of the circular to which our attention is especially called is the Bartlett sanitary boiler, made with an inverted cone bottom below the line of circulation, so that it becomes a settling place for mud or other deposits, and prevents the water back becoming filled with mud or other substances. At the bottom of the cone is a large blow off opening, through which the contents may be drawn off and the interior thoroughly cleaned. Another feature is that both the connections for the water back pipes are in the side of the boiler, one just above the inverted cone, and the other about a foot higher. Those who have read the article in the Letter Box on "Improvements in Boiler Connections" will be interested in the Bartlett sanitary boiler.

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Court Decision on Damage by Electrolysis.

The Court of Common Pleas has found against the City Railway Company of Dayton, Ohio, in an action brought against them for damage done to the water pipes of the city by electrolysis. The decision is as follows:

This Court has no authority in law to compel a change in the system from the single trolley to the double trolley, and, if the same were warranted by the law, the facts would not justify such a change. The defendant has been and is operating its road in a negligent manner, causing continual damage to the water pipes of the plaintiff, for which the plaintiff has no adequate remedy at law, and cannot by any practical method prevent such damage.

It is no excuse in law, and the facts would not justify the defense, that other electric lines in Dayton are contributing to this or doing like damage. It is, therefore, the duty of the Court to enjoin the defendant from so operating its railway and to compel it, within a reasonable time, to introduce such improvements in the system, in order that the operation of the single trolley system authorized by the franchise and contract will be in accordance with the present standard of the art of operating single trolley roads. The plaintiff shall co-operate to that end. All matters of detail can be arranged between counsel and the Court in the final order. The costs will be adjudged against the defendant.

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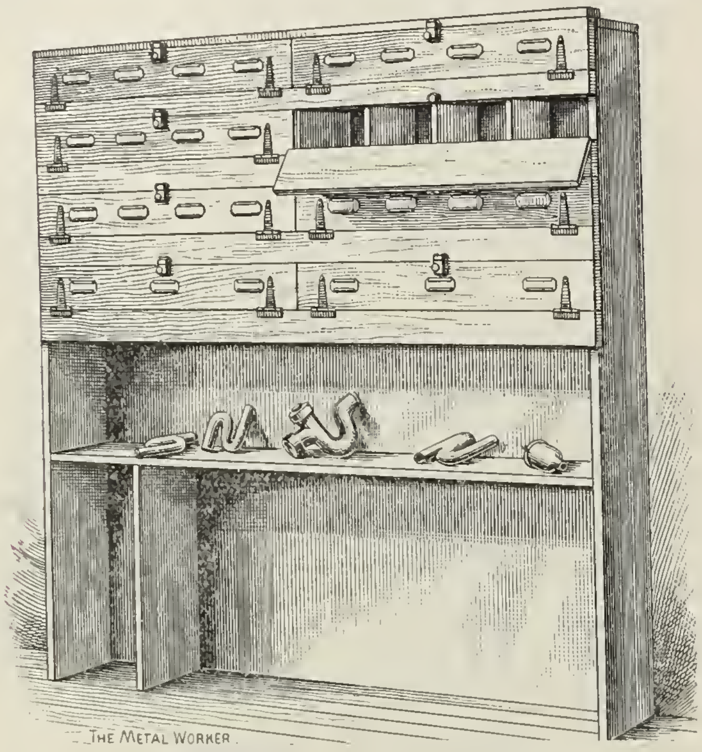
A New Pump Catalogue.

Rumsey & Co., Limited, of Seneca Falls, N. Y., and 35 Dey street, New York City, are sending out the fifty-third edition of their illustrated catalogue of power pumps and hydraulic pumping machinery for all purposes for 1902. It consists of 256 pages, bound in red cloth and provided with a well arranged index. General views are given of the company's plants at Seneca Falls and St. Louis, together with pictures of their branch houses and distributing agencies. The first section of the catalogue includes cistern pumps of the standard open top style, pitcher pumps and round spout pitcher pumps. These are followed by the Maltese Cross anti-freezing cistern and well pumps. A great variety of hand and wind mill lift and force pumps are shown, adapted for attaching to a platform or for fastening to a side wall. The series of wind mill pumps are followed by wind mill stuffing box heads, artesian well working heads and other specialties. Another section is devoted to hand and power pumps for deep well use with heavy balance wheels and pulley fly wheels, with the iron and brass lined cylinders used in such pumps. Drive well pumps, sucker rods, foot valves and strainers, and house pumps, either for attaching to a platform or to a side wall of a building, are followed by similar pumps designed to be operated by a belt from an engine, as well as hand lever oscillating force pumps.

Soda water pressure pumps, double acting ship pumps and pumps of a similar type mounted on platforms with wheels are followed by heavy duty pumps, to be operated by power. Another pump shown is designed for contractors who have to lift large quantities of water from cellars, trenches, &c., containing more or less gravel, mud or other foreign matter. The next 75 pages are devoted to power pumps for lifting water, oil or other liquids under a heavy pressure, and for engine room purposes, together with a complete line of rotary pumps and centrifugal pumps to be operated by steam or gas engines. Several pages are occupied by hydraulic rams, with information in reference to setting them. Plumbers' suction and force pumps and testing pumps are followed by spray pumps for farmers' use, street hydrants, curb boxes and fittings, cast iron sinks, hydrant cesspools, sewer traps and similar fixtures, jack screws, pipe tongs, pipe cutters and stocks and dies. The last section of the catalogue is devoted to garden pumps and small engines for either garden or fire purposes. Several pages give useful information in regard to the company's line of goods and the catalogue closes with a price-list and a code index.

CABINET FOR FITTINGS.

One of two cabinets for holding fittings used in the store of James Wilson, Stamford, Conn., is illustrated in Fig. 1. This cabinet, which stands 7 feet 4 inches high, is 7 feet 2 inches long and is made of 1-inch boards and finished in cherry stain. The upper part of the cabinet is divided into 30 compartments. Across the front and at the bottom of these are run 3-inch strips, the entire length of the cabinet, making small bins. Above each of these strips are hinged two 6-inch boards, 3 feet 7 inches long, which serve as doors for the bins, and are held closed by spring catches. On the front of these doors are nailed pieces of tin for holding the card labels that describe the goods in the bins. These card holders, shown in Fig. 2, are 4½ inches long and 1½ inches high, and are made of ordinary tin plate bent into the shape shown. Fig. 3 indicates the arrangement of the compartments in the cabinet, of which there are 30. Fig. 4 shows the arrangement of the compartments in the other fittings cabinet in the store. The numbers on both Figs. 3 and 4 refer to the articles kept in each compartment, as indicated by the labels on the doors, which are as follows:



Cabinet for Fittings.—Fig. 1.—General View.

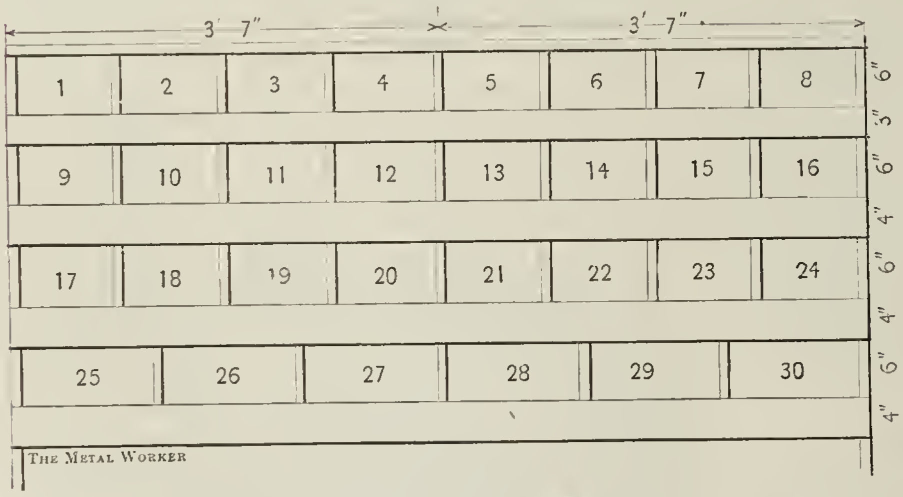


Fig. 3.—Compartments in Large Cabinet.

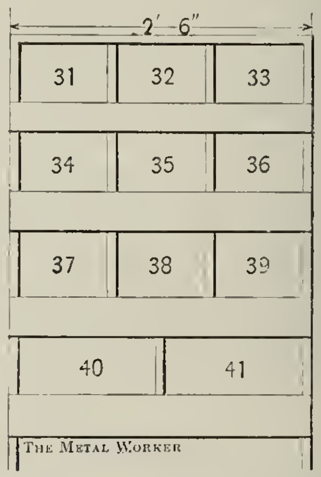


Fig. 4.—Compartments in Small Cabinet.

1. ½-inch stop cocks.
2. ¾-inch stop cocks.
3. 1-inch stop cocks.
4. 1¼-inch stock cocks and check valves.
5. ½-inch stop cocks.
6. ¾ W. B. couplings for iron pipe—male and female threads.
7. ¾ W. B. couplings for lead pipe—female threads.
8. Ball cocks.
9. ½-inch brass soldering nipples.
10. ¾-inch brass soldering nipples.
11. 1-inch brass soldering nipples.
12. 1-inch brass soldering nipples.
13. Wash tray cocks, I. P.
14. Wash tray cocks, S. P. Hamilton.
15. Wash tray cocks with stuffing box for B. N. lead pipe.
16. Copper balls.
17. Basin clamps.
18. Basin plugs and chain stays.
19. ¾-inch draw cocks, I. P.
20. ½-inch draw cocks, I. P.
21. ½-inch draw cocks, I. P.
22. Nickel sill cocks.
23. ⅝-inch Hamilton sink cocks for lead pipes.
24. Hydrant fixtures.
25. Meter cocks.
26. Flange and thimble cocks; meter cocks.
27. Flange and thimble cocks.
28. Boiler spuds.
29. Basin cocks.
30. Brass ferrules.
31. ½-inch Jenkins valves.
32. ¾-inch Jenkins valves.
33. 1-inch Jenkins valves.
34. 1-inch rod valves.
35. 1¼-inch rod valves.
36. 1-inch Jenkins valves.
37. ¾-inch rod valves.
38. 1-inch and 1¼-inch hot water valves.
39. 2-inch globe valves.
40. Patent closet connections; long rubber coupling; straight rubber coupling.
41. Ball cocks.

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Long Distance Heating in Germany.

United States Consul-General Richard Guenther of Frankfort reports to the State Department the completion at Dresden, Germany, of the largest long distance heating plant in Europe. From a central station, says the Consul-General, many public buildings on the left bank of the River Elbe, including the theater, the museum, the castle, the royal kitchen, the Custom House, &c., are heated. The greatest distance over which heat is transmitted is ¾ mile. The total heat consumption per hour is 15,200,000 heat units. The usual steam pressure is 2 atmospheres. Ten of the 14 boilers are used, and to guard against accidents two main lines of pipes have been provided. The loss of heat in transmission is from 4 to 4½ per cent. The pipes are protected by two layers of tin, the inner layer being perforated and the outer one covered with silk. The largest pipes have a diameter of 216 mm. (8.51 inches).

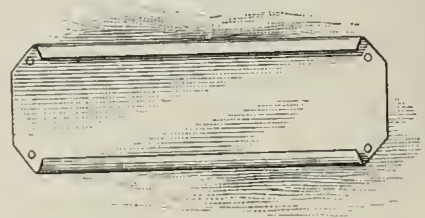

Fig. 2.—Tin for Holding Labels.

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FRED. GAMACHE has been granted a license as a plumber at Adams, Mass. He took the examination in Pittsfield, securing an examination average of 100 per cent. He was informed that his work of wiping tank seams was the best passed upon in the past 17 examinations.

Moistening Air.

The process of contributing moisture, in quantities desired, to the moving air which is supplied to the modern public school houses in Rochester, N. Y., says the *Press* of that city, is claimed to contribute materially to the comfort and health of the teachers and pupils an dis warmly approved by physicians. Under the new system the water is evaporated in the boilers and supplied to the moving air in the form of vapor, under conditions which insure automatic regulation. Standards differ somewhat but the ideal English system is said to be air at a temperature of 50 degrees F., with 55 per cent. moisture. The temperature of school rooms in Rochester varies from 60 to 65 degrees F., and the percentage of moisture is somewhat lower than in English practice. When the temperature is at 70, or above, the plentiful supply of moisture is said to make the atmosphere in the school rooms oppressively humid. Under modern conditions this humidity is under absolute control.

It is stated that 15,000,000 cubic feet of air is driven through the rooms and halls of the new No. 6 school building daily. To supply the desirable moisture requires as much horse-power as is required for supplying the pure air. It is held by physicians that the addition of moisture to the air supplied to the school rooms is absolutely necessary, in order to avoid catarrhal and other similar difficulties. The affinity of the air for moisture is so great that absorption of moisture from the system goes on very rapidly, with the bad effects referred to. So great is the amount of water added to the air furnished to the school rooms, that it is stated that the effect is equivalent to that of hanging cloth, saturated wih water, on all of the walls and ceilings. When properly supplied, and not in excessive quantities, the moisture is said to materially improve conditions.

New York City Notes.

Henry Beig, a pioneer in the manufacture of crockery washtubs in this vicinity, whose pottery was on Wallabout street, between Kent and Classon avenues, Brooklyn, died last week after a lingering illness. The funeral services took place on the 20th inst.

* * *

The many friends throughout the country of George F. McQuillen, late plumbing director of the Wells & Newton Company of New York, will regret to learn of his sudden death, which took place on Tuesday. Many members of the Master Plumbers' Association, of which he was an active member, attended his funeral from St. Joseph's Church Friday.

* * *

The Board of Education is trying to keep up its school capacity in proportion with the growing population. James Fay of Manhattan is plumbing two Brooklyn schools situated at Quincy street and Lewis avenue and Sixtieth street and Fourth avenue, and one in Queens on Greenpoint avenue, near Calvary Cemetery. James Harley of Brooklyn is rapidly completing the plumbing in the Girls' High School, at 114th and 115th streets and Seventh avenue, Manhattan.

* * *

D. J. Deady is finishing the overhauling of the plumbing in the Casino in Central Park and expects to start work at once in the new Children's Court House, at Third avenue and Eleventh street.

* * *

The friends of Edward Macdonald, the Brooklyn representative on the Examining Board of Plumbers, presented him last Monday with a large floral horseshoe, expressing the sentiment " Good Luck."

* * *

The George C. Edgar Company recently sold two of the houses on Fifth avenue and Eighty-eighth street where the plumbing is being done by Malcolm & Taylor to Charles P. Huntington of the Southern Pacific Railroad for about $500,000. These houses are the most costly speculative private dwellings erected in the city.

Among the changes recently made by Police Commissioner Partridge was the abolishing of the repair squad and incidentally of the services of the four plumbers employed on it. This will put the police work again in the market, where it rightfully belongs.

Peculiar Example of the Deterioration of Wrought Iron Pipe.

In a communication to the *Proceedings* of the British Institution of Civil Engineers, William Wark reports an unusual experience with wrought iron pipe buried in light sandy soil at Hay, New South Wales. In the year 1885 the gas works were built, and the usual course was adopted of laying the consumers' services of ordinary black wrought iron pipe. The conditions of climate appeared to warrant the expectation that precautions such as are usual in the humid climate of the United Kingdom would not require the same consideration in New South Wales. It was assumed that the dryness of the climate would constitute a factor in the preservation of all iron work, and this has proved to be so, but only in the case of iron not in contact with the soil.

After the lapse of 11 years attention was drawn to a steady increase in the amount of gas unaccounted for, and examination led to the discovery that the pipes had completely perished and exposure to the air had caused them in some instances to crumble to pieces, while in others the granulated appearance of the external surface suggested galvanic action between the metallic base of the soil and the wrought iron. The suggestion that the action of coal gas was in any measure accountable for the corrosion was not upheld by any facts elicited during the investigation. The interior of the pipes may, through the action of impurities in the gas, scale and become filled with rust, but the evidence in case strongly supported the assumption that the injury was due principally to external causes, and this theory is partially borne out by the fact that wrought iron water service pipes, in the town, have a life of only seven years.

The influence of soil in contact with the metal has been held responsible for the structural alteration of its character, but it has not been proved that the deterioration is due to the constituents of the soil, to dampness or to the alterations of moisture and dryness, and it is probable that, owing to the light character of the soil, the great variations of temperature throughout the seasons exercised some influence. Analysis of the soil disclosed the presence of large quantities of common salt and magnesium chloride, in addition to iron, alumina, silica, lime and phosphates. Owing to the dryness, heat and length of the summer season, it is customary to water the streets frequently, and, as they are uniformly level and without any system of drainage, the subsoil is continuously damp. It is conjectured that, as the result of this periodical and frequent street watering, the combination of carbonic acid with the moisture so readily absorbed by the porous earth formed the basis of chemical action, and the alternate moisture and dryness no doubt greatly facilitated the process of deterioration. To all appearance the trouble is confined to wrought iron, the cast mains not showing any signs of unusual injury. Experience in other parts of the colony is quite at variance with that at Hay. In Bathurst, where the soil is of a rotten granite nature, services are still in use, and apparently quite sound, after a life of 27 years.

In relaying the Hay services the preservative measures adopted consisted in applying heat to the pipe and then coating it with boiling coal tar, with a little lime added to neutralize the carbonic acid before application, and in imbedding the pipe in a layer of asphalt. Raw tar is not well suited for coating iron. Instances have been known of damage resulting from its use, the injurious action arising from the presence of carbonic acid. Exception has been taken to the inference that lime exerts a protective influence over wrought iron, since from its hygroscopic character it must act as the vehicle for conveying the very element which it should be the aim to exclude. Where clay is obtainable, puddle is recommended for the envelopment of pipes as a preventive against injury by corrosion.

Painting Hot Water Tank of Iron in Imitation of Copper.

The following instructions are given by the *Painters' Magazine* to a correspondent who asks how to give an iron hot water tank a copper appearance by painting the same and wants to know whether the same will be durable:

We would say that two coats of paint, composed of a first-class baking varnish and pigment, each coat baked on the iron by heat, would be fairly serviceable. If the color is to be a mere approach to copper, a mixture of a bright red with yellow and black, ground in and thinned with high grade baking varnish, would serve the purpose. Or a good copper bronze, such as is used on steam radiators or pipes, mixed with such a varnish as described, might be even better. In this case, when the first coat has been baked on by the heat generated from the hot water in the tank, a second coat, before it has fully set, could be dry bronzed to enhance the brightness of the job. Still another but more troublesome plan is to take the solution of any salt of copper, such as blue stone (blue vitriol), for instance, and place in this pieces of scrap iron, which precipitates the metallic copper. This is collected on a filter, dried and mixed with a high grade baking varnish and applied as suggested in the other methods.

Pipe Joint Paste.

The Wisconsin Graphite Company, Pittsburgh, Pa., manufacturers of Wisconsin graphite pipe joint paste, have appointed the following firms distributing agents for their products, and announce that each of these agents will carry a large and complete stock, guaranteeing prompt delivery to customers: L. H. Tillinghast Supply Company, Providence, R. I.; Frank C. McLain Company, New York, N. Y.; Ronalds & Johnson, Brooklyn, N. Y.; Roe & Conover, Newark, N. J.; Jas. Reynolds, Rochester, N. Y.; Duquesne Supply Company, Pittsburgh, Pa.; National Supply Company, Toledo, Ohio; Jas. B. Clow & Sons, Chicago, Ill.; Marshall Oil Company, Marshalltown, Iowa; E. W. Sellers, Stevens Point, Wis.; Hendric & Balthoffs, Denver, Col.; A. Aschaffenburg Company, New Orleans, La.; Thomas Summerville & Son, Washington, D.C. The company claim that their pipe joint paste has met with remarkable success everywhere, as testified by the large number of orders received by them, not only from the United States, but also from foreign countries. They will be pleased to furnish a sample can of the paste upon application to any who are interested in this class of material.

Heating and Plumbing Notes.

There is a general feeling of regret among the bowlers in the supply trade that the series of games between the supply men of Boston and New York City cannot be arranged this year. The team of the Plumbing and Steam Supply League were successful in winning two games out of three in the contest with the Fire Insurance League team on April 18, but a waterloo was found in store for them when they met the Commercial League team last Tuesday night, for, notwithstanding the fact that they bowled well, the Plumbing and Steam Supply team lost all three of the games.

William O. Needles, a plumber of Columbus, Ohio, has brought suit for $10,000 damage against a number of supply houses and master plumbers of that city, who he claims have entered into a conspiracy to prevent him from securing goods for carrying on his business.

Walls & Pearsall, Philadelphia, Pa., have given out the contract for the erection of a four-story warehouse, 50 x 160 feet, of fire proof construction, on Eleventh street, running through to Hamilton street, with office building on Ridge avenue. This will enable them to handle their specialties in Plumbing Supplies with greater facility.

The plumbers' strike at Reading, Pa., has been settled on a basis of a day of nine hours and a wage of $2.75.

At a recent meeting of the directors of the Federal Boiler & Supply Company, 88 Center street, New York City, a dividend of 1¾ per cent. was declared on the preferred stock, payable May 1.

The plumbing and heating establishment of John O'Neil & Sons, at 218 Main street, Peoria, Ill., was visited on April 15 by a fire, doing damage to the extent of $2000, which is covered by insurance.

C. W. Bowtell, Fort Edward, N. Y., is installing power and machinery in his brick building, at the corner of Taylor and McIntyre streets, and will engage in the manufacture of Plumbers' Brass Goods and Supplies.

The largest order for Pipe Covering ever placed has just been secured by the H. W. Johns-Manville Company of New York from the Pacific Coast Oil Company, a branch of the Standard Oil Company. It is for 280 miles of covering for a line of 8-inch pipe, which the company are laying from Bakersfield to Point Richmond, Cal., on San Francisco Bay, in order to convey their oil to the coast. The shipment will fill about 200 cars. The necessity for using this Pipe Covering arose from the fact that on account of the heavy nature of the oil, it has to be heated to a certain temperature before it can be pumped, and this temperature must be maintained by the oil in the pipes between the pumping stations. In order to do this a nonconducting Covering is necessary.

The E. S. Wheeler & Co. of New Haven, Conn., and 12 and 14 Cliff street, New York, whose business in Plumbers' Supplies covers a wide territory, have just issued a new catalogue containing much matter not found in other publications and made up entirely of half-tone illustrations which really illustrate. The company send it express paid to architects and to their customers only, it being too expensive a book for general distribution. They may publish later a cheaper edition for general distribution.

The Alabama Tube & Iron Company, Birmingham, Ala., have increased their capital stock from $150,000 to $200,000, in order to carry out extensive improvements at their plant at Helena, Ark.

The New York City office of the Maddock Pottery Company of Trenton, N. J., will be removed about May 1 to 25 West Broadway.

Hooker & Lightbody of Jacksonville, Fla., have secured the contract for heating the new Municipal Building in that city.

Charles F. Bartlett, Philadelphia, Pa., has the contract for installing steam heating plants for Charles M. Swain and M. H. Harrington and a combination hot air and hot water heating plant for J. Henry Bartlett.

An interesting feature of the labor troubles in the plumbing trade at Youngstown, Ohio, is the condition of the purposed agreement, which is that the journeymen plumbers shall agree to work only for members of the Master Plumbers' Association. This question is being discussed by the journeymen, as there are two concerns in the town who are not members.

A dispatch from Birmingham, Ala., states that J. A. Gates and others are organizing a stock company with a capital of $50,000 to establish a plant for the manufacture of Enameled Iron Bathtubs.

It has been announced that the American Radiator Company are about to erect a new factory in the East. The company deny this statement, however, the erroneous impression probably arising from the fact that they are erecting an extension to their warehouse at Harrison, N. J., the expansion of their business in the Eastern territory having made such an addition imperative. The new building will be constructed of brick and will be 110 x 145 feet in size, 27 feet high. It will be equipped with traveling cranes for convenience in handling Boilers and Radiation.

W. G. McPherson, a prominent heating contractor of Portland, Ore., was a welcome caller at our Chicago office this week, *en route* to New York.

The Kellogg-Mackay-Cameron Company, Chicago, recently added a Sprinkler department to their extensive business. The advanced rates demanded by insurance companies have made necessary the installation of automatic fire extinguishing systems to a much greater extent than has been anticipated, and the increase in this department has been very gratifying. They now have a large number of contracts to be filled. The installation of these systems is consuming a great deal of Pipe and Fittings.

The Board of Control of Cleveland, Ohio, have adopted a new set of rules for examining plumbers and sewer builders who apply for licenses. The examination includes 30 questions and some practical work. It is said that the examination will be more rigid than heretofore, and that at least 70 points must be reached in order that a license may be secured.

The Wheeling Steel & Iron Company, Wheeling, W. Va., expect to have their new Tube mill at Benwood in operation by June 1. When completed the plant will be one of the finest Pipe mills in the country. It will be supplied with the most modern machinery and equipment. Each machine will be operated by its own electric motor. Electricity will also be used exclusively for all heavy lifting. Electric cranes of the most powerful type have been installed.

The report of Major W. C. Gorgas, chief sanitary officer of Havana, shows an increase in the sanitary work done in and about buildings and cesspools of that city in the month of February. The plumbing division also shows an increase in the work done, 151 inspections having been made during the month and a larger number of applications for permits to do work and of plumbing installations completed being noted.

A feature of the strike among the plumbers of Newark, N. J., is the action taken by the master plumbers to complete a large tenement house for occupation on May 1. On Monday morning 60 of the master plumbers went to work on this building and will continue until the plumbing work is completed. They will receive $3.50 per day for their labor in helping out one of the members of their association.

F. M. Lutschg, Great Bend, Kan., will receive bids until May 14 for installing a hot water heating apparatus in the Barton County Jail, at Great Bend.

A fire visited the plumbing shop of Lindsay & Dodds at Amsterdam, N. Y., last week, caused by a workman falling while carrying a lighted candle, which set fire to some oakum. The fire was soon put out with but small loss.

The plumbing for 57 double tenement houses, to be erected at Rumford Falls, Maine, has been awarded to F. & C. B. Nash of Portland, Maine, at their bid of $9397.

The C. F. Rock Plumbing Company, St. Joseph, Mo., have been awarded the contract for the steam heating plant in the German-English School in that city.

Lewis & Kitchen of Kansas City, Mo., have been awarded the contract for placing a hot blast system of heating in the Everett School, at St. Joseph, Mo.

The Detroit Range Boiler Company, Detroit, Mich., will build an addition, 100 x 110 feet, to their plant, which will be used for storage and for pickling and galvanizing.

The Pipe foundry of the Central Foundry Company, at Lansdale, Pa., which was closed last summer, is about to be acquired by a new company, who, it is understood, will make heavy castings.

The National Hardware & Malleable Iron Works, Thomas Devlin & Co., Philadelphia, Pa., have purchased 50 acres of ground at Burlington, between the Delaware River and Pennsylvania Railroad, where they will erect a new plant.

The Gallup Hardware Company, Port Allegany, Pa., have engaged George H. Smith, formerly of Angelica, N. Y., to take charge of their plumbing and heating department, which they have opened in connection with their Hardware business. The company will be pleased to receive catalogues and price-lists from manufacturers and dealers in goods in these lines.

The James P. Wood Company, Philadelphia, Pa., will install a boiler and alter the steam supply system in the Bellevue Hotel at Broad and Walnut streets, that city, at a cost of $3000, and will install a low pressure steam heating plant in the building 1416 Walnut street, to cost $1000, both for George C. Boldt.

John Brown, whose death occurred on Saturday in Brooklyn, N. Y., was once one of the wealthiest plumbers in that city, his wealth being estimated at $100,000. He was born in Paterson, N. J., 60 years ago, and in 1868 started in the plumbing business at 857 Fulton street. He has been a member of the National Benevolent Legion and of the Volunteer Fire Department and of the Andrew Jackson Club of the Twentieth Ward. He failed in business four years ago, and lost all he had.

I. Koblitz & Son, plumbing contractors, have leased the store room from Louis Poplowsky, at 347 Prospect street, Cleveland, Ohio, and are installing a plumbing shop and display room. They will operate this down town store in addition to their Broadway shop.

The Mankato Plumbing & Heating Company, Mankato, Minn., sustained a slight loss by fire in their shop on April 15.

New Firms and Changes.

The Porter Valve & Mfg. Company of 419 Market street, Camden, N. J., have been incorporated by David W. Porter, S. B. Witherspoon and Herman C. Smith with a capital of $50,000, to manufacture Valves, &c.

The Furlow Sanitary Brass Works Company of Philadelphia have been incorporated with a capital of $50,000 to manufacture Sanitary Plumbing Fixtures and Supplies.

Smith & McNeil, plumbers and tinsmiths, who have succeeded to the business conducted for years by John W. McCarthy, at Port Chester, N. Y., will have their shop and office in the McCarthy Block, on North Main street.

T. F. Leonard of Marlboro, Mass., has started in the plumbing business at 3 North Main street, Wellesley, Mass., under the name of the Natick Plumbing, Heating and Stove Company. Mr. Leonard already has many Natick contracts on hand besides a large plumbing contract for N. C. Griffin of Cochituate.

The Woodworth-Evans Company of Pittsburgh, Pa., will apply for a charter early next month. The company will succeed Woodworth, Evans & Co. in the manufacture of Plumbers' Brass Supplies and the retailing of Stoves and Ranges. The incorporators are: Austin M. Woodworth, Frank R. Woodworth and N. F. Savage. The company are operating a brass foundry and finishing plant at 434 Second avenue, Pittsburgh, which will be enlarged.

The United States Tube Company of Buffalo, N. Y., have been incorporated with a capital stock of $1,000,000, to manufacture Metal Tubes, Flues, Pipe and other metallic articles. The directors are: H. R. Flagler, C. H. Twist and H. C. Diehl of Buffalo; A. W. Thomson, Cleveland; G. W. Dickinson of New York; G. B. Royce of Rutland, and O. S. French of Fremont, Ohio.

The Keystone Valve Mfg. Company of Pittsburgh, Pa., have been incorporated with a capital of $10,000 by J. D. Riley, W. A. Larimer, W. H. McCully, W. J. Simpson and S. McKay. The company will erect a plant for the manufacture of Valves.

Storms & Co. have filed articles of incorporation to conduct a general plumbing and heating business, with principal office at 112 Fourteenth street, Newark, N. J. The capital stock is $10,000, of which $2500 is paid in by John G. Storms, Sarah Kelly and John Mullin. The concern will acquire the business conducted under the same name, at 40 Thomas street, Newark.

The Cedar Rapids Plumbing Company, Cedar Rapids, Iowa, have been incorporated with a capital of $10,000 to conduct a general plumbing business. Their showroom will be at 321 First avenue. The officers are C. E. Brown, president; G. H. Bollman, vice-president; James L. Beyer, Jr., treasurer, and Robert Palmer, secretary.

A Miniature Farm.

A miniature farm, complete with farm house and other buildings and with fields verdant with growing crops, attracted much attention last spring to the show window of Aug. J. Kronsbein, Malvern, Iowa. This farm, which is shown in Fig. 1, measured 8 feet long by 3 feet wide, and was placed in a wooden box, with the earth so graded as to represent a side hill farm. It was well laid out, and gave the appearance of being a highly improved farm, with all the modern conveniences, including the mail box for rural delivery and telephone. Mr. Kronsbein sells most of the things appearing on the farm, such as the Fencing, Wind Mill, Grindstones, &c. He makes a specialty of Farm and Garden Seeds, and has a variety planted in each of the seven fields in his miniature farm.

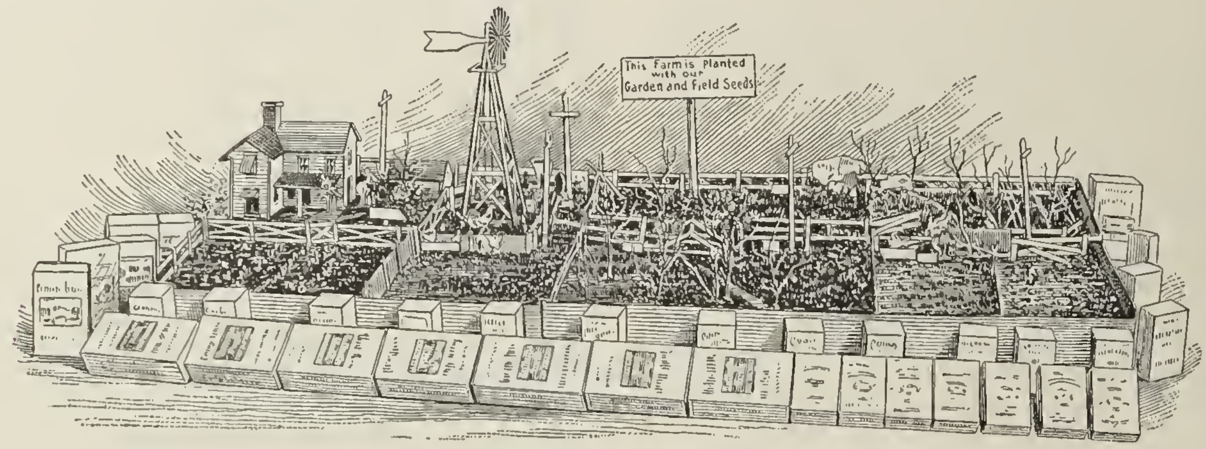
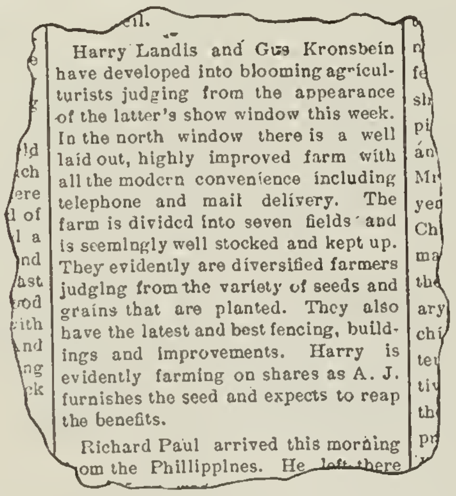

This Farm is Planted with our Garden and Field Seeds

Fig. 1.—Miniature Farm in Show Window.

This window proved so popular that a crowd would be found standing in front of it almost all the time. The sales of seeds are said to have largely increased over previous years, due in a large measure to the window advertising given by the display. The notice shown in Fig. 2 from a local weekly paper shows the kind of a press notice that may frequently be gotten without expense.



Harry Landis and Gus Kronsbein have developed into blooming agriculturists judging from the appearance of the latter's show window this week. In the north window there is a well laid out, highly improved farm with all the modern convenience including telephone and mail delivery. The farm is divided into seven fields and is seemingly well stocked and kept up. They evidently are diversified farmers judging from the variety of seeds and grains that are planted. They also have the latest and best fencing, buildings and improvements. Harry is evidently farming on shares as A. J. furnishes the seed and expects to reap the benefits.

Richard Paul arrived this morning om the Phillippines. He left there

Fig. 2.—Newspaper Notice of Display.

This serves as a good advertisement, and is so written that it is good news for the paper, being interesting to the readers.

◆

Our London correspondent suggests a useful tip in connection with packages sent with goods to Australia. Under the new Australian tariff all packages have to pay duty in addition to the goods they contain. He suggests that tanks for water storage be used for this purpose, instead of wooden cases and casks, there being quite a demand for water tanks in Australia. An English firm are meeting this condition by manufacturing a tank with a neatly fitting lid fastened with screws and nuts, thus dispensing with the ugly bunghole in the lid.

TRADE NOTES.

The Standard Metal Mfg. Company have been incorporated at Newark, N. J., by George Alfred Brown, Millard W. Baldwin and Frank R. Serles, with a capital stock of $100,000, of which $100 is paid in. They will manufacture Metal Articles of all sorts.

Golding & Co., 540 Pearl street, New York, are sending to those who employ a large force of draftsmen an interesting catalogue showing an outfit for printing on tracing cloth. It also contains a number of testimonial letters from railroad and other shops where the company's printing outfit is used for printing the titles and explanations on drawings in the drafting rooms.

The Genesee Metal Works of Rochester, N. Y., have been organized by Levi Hey, Ernest C. Hazard, George R. Coates, F. W. C. Reidenbach and John Bennett to manufacture various Metals, including Phosphor Bronze, Phosphor Copper, Manganese Bronze, Ingot Brass and Babbitt Metals. Mr. Reidenbach will be the general manager of the company.

The Marlin Fire Arms Company, New Haven, Conn., have issued an attractive catalogue of 120 pages in the interests of their Marlin Repeating Rifles, Shotguns, Shells, Loading Tools, Sights, &c.

The Monongahela Foundry & Forge Company, recently incorporated with a capital stock of $50,000, have secured the buildings formerly occupied by the Pittsburgh Stove & Range Company, at Monongahela City, Pa., and will there make Gray Iron Castings and Forgings.

A large addition is to be built to the North Brothers Mfg. Company's plant at Philadelphia, consisting of a brick building five stories in hight, measuring 25 x 40 feet.

The S. Obermayer Company, Cincinnati, Ohio, have closed a contract for furnishing a quantity of Foundry Supplies and Foundry Facings for the new plant of the British Westinghouse Electric & Mfg. Company, Limited, at Trafford Park, near Manchester, England.

A. L. Pedersen & Co., 321 East Thirty-fifth street, Chicago, are manufacturers of Metal Patterns in Brass, White Metal and Aluminum. The firm have been established for some time, have built up an excellent reputation for quality of workmanship, and are now extending their operations to include a much wider field than that to which they have hitherto applied their energy.

The National Lead Company of New York City suffered a $150,000 loss by fire at their plant on Front street, Brooklyn. The factory was equipped with expensive machinery and was almost totally destroyed.

◆

A record breaking run of 14.8 miles from Eckley to Wray, Col., was made recently by a train on the Burlington road. The distance was covered at the rate of 98.6 miles an hour.

C. M. Schwab has agreed to defray the expenses of adding an auditorium to the Industrial and Manual Training School that he is having erected in Homestead, Pa.

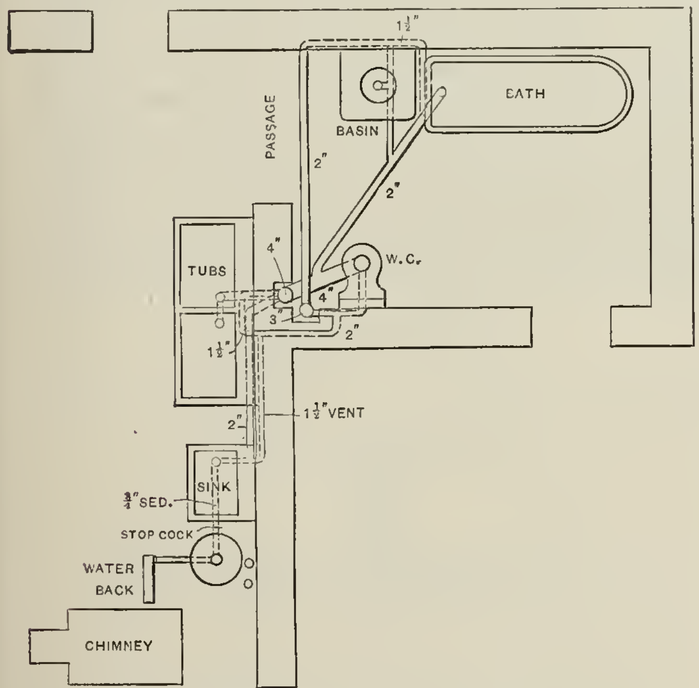
THE LETTER BOX.

Inquiries in regard to practical questions of general interest are invited, in reply to which we shall be glad to receive suggestions and information from our readers.

Correspondents are requested in all cases to give their names and addresses, which will not, however, be published or disclosed without their consent.

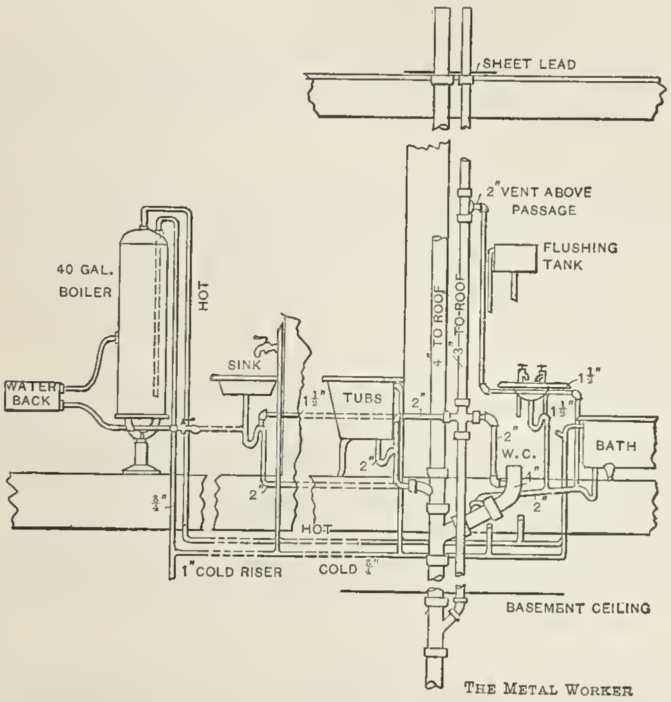
PLUMBING A TENEMENT.

From E. F. N., New York.—Having read the request of "A. O. B." in *The Metal Worker* of April 5 I present the following for his information: It would have been easier to have given him the information he desired if he had presented complete plans of the different floors on which the bathrooms and kitchens are located. If the bathrooms adjoin, one partition forming a dividing line between the two buildings, one line of 5-inch soil pipe would be sufficient to carry off the waste. A 5 x 4 inch cross could have been inserted to receive the waste connections from the fixtures on each side of the main partition. The branch running over to the water closet, shown in Fig. 1, should have a 4 x 2 inch T Y inserted to receive the waste from the basin and bathtub, and a 4 x 2 Y near the lead bend of the closet to receive the waste from the wash trays and sink. I have assumed, however, from the plan given, that it would be impossible for one 5-inch line of soil pipe to be arranged so as carry the waste from all the fixtures, and have shown in Fig. 1 a plan of the waste and vent pipes, including a 4-inch main soil pipe and a 3-inch vent pipe. Fig. 2 is an elevation showing how the pipes would be run, the traps located and the vent pipes connected. If there are no fixtures, like a closet or a sink, in the basement, the 3-inch vent pipe could be connected with the main soil stack just below the basement ceiling. The plan shows the bathroom with two outlets, or doors, making it necessary to cross the room with the vent pipes to reach the 3-inch main vent stack; consequently a 3 x 2 inch Y must be placed on the vent stack above the ceiling in each bathroom, and 2-inch galvanized wrought iron pipe must be carried from this branch, crossing the ceiling and dropping down in the partition wall to connect with the fixtures. It is best for it to be stopped at 2 feet 8 inches above the floor, and have lead branches connected with the crown of the traps, as shown in Fig. 2. In roughing in, it will be easier to use all half S traps for the sink, baths and wash trays, and to have the traps to discharge straight to the wall. The horizontal outlet of the trap should be 8½ inches above the floor for the wash trays, 16 inches for the basins and 16 inches for the sinks. The measurements for roughing in the pipes for the water closets, if they are of sanitary earthen ware, can be secured from the supply house, who will give the distance from the wall to the center of the lead bend. Fig. 2 shows in elevation the main water service pipe, which should be of 1½-inch galvanized iron or lead pipe, with ¾-inch branches to supply the different fixtures. This pipe should have a stop and waste cock, so that the water can be shut off and the system drained when the building is closed.



The Metal Worker

Plumbing a Tenement.—Fig. 1.—Plan Showing Piping.

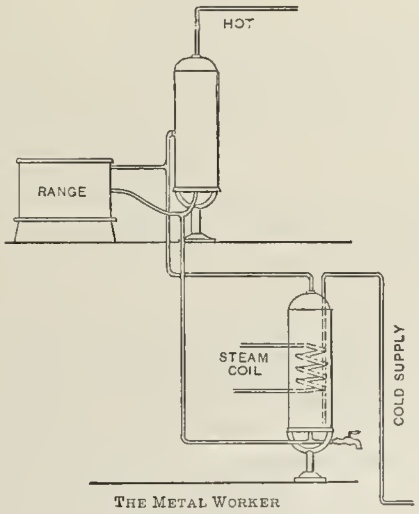


The Metal Worker

Fig. 2.—Elevation, Showing Waste, Vent and Water Service Pipes.

A PROBLEM IN BOILER CONNECTIONS.

From H. F. S., Merrill, Wis.—In reply to the letter of "B. H. C." in *The Metal Worker* of March 1, I would say that I have connected two boilers as shown by the accompanying sketch, and they work very satisfactorily. The difference between my job and his is that in my case the upper boiler was heated from a range while the lower boiler was heated by the steam coil. But this would make no difference, as they work either way as connected. I cut off the cold water supply from the upper boiler and attached it to the lower one. I then took a pipe from the bottom of the upper boiler and carried it to the bottom of the lower boiler, and ran a pipe up from the top of the lower boiler to the side connection in the upper boiler. This gives all the hottest water to the upper boiler, and when hot water is drawn for bath or other purposes it does not disturb the temperature of the water in the upper boiler by letting the cold water in, as the cold water feeds directly to the lower boiler, and when water is drawn the hottest water in the lower boiler passes to the upper one. If the lower boiler is the only one heated, the hottest water will still go to the upper boiler. If the upper boiler is heated by the range and there is no steam flowing into the coil in the lower boiler it will work the same as if only one boiler was



The Metal Worker

A Problem in Boiler Connections.

connected. The connection sugested by "I. H. S.," in *The Metal Worker* of March 8, may work all right, but if a strong fire was run at both boilers it might raise steam, which would rise to the top of the hot water service pipe of the upper boiler and cut off circulation in the upper boiler.

Note.—An error was made in the cut used with this article, as it was presented in *The Metal Worker* of April 12. It is repeated with the cut herewith showing the correct piping.

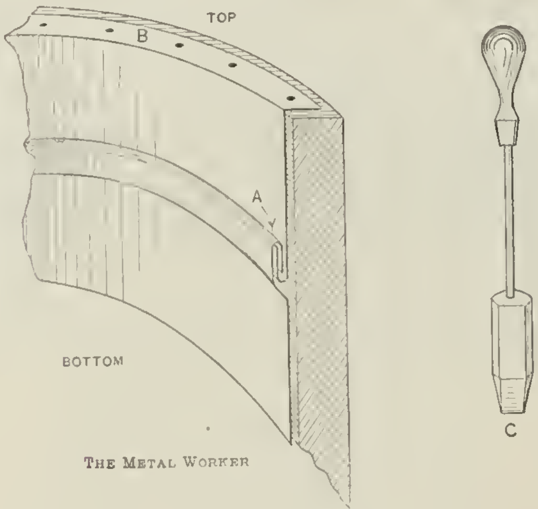
MARKING FLUID FOR GALVANIZED IRON OR ZINC.

From C. S., New York.—Would you kindly inform me how to make the mixture for a good marking ink for galvanized iron and zinc?

Answer.—Take a small bottle and partly fill it with muriatic acid, into which put a small quantity of copper filings—that is, the filings from the soldering copper, which have been filed previous to tinning. Allow it to stand a few days until the acid turns to a dark blue color, when it is ready for use. Take a piece of hard wood and point it similarly to a pencil. By dipping this into the fluid the zinc or galvanized iron can be marked with it as desired.

LINING TANK WITH GALVANIZED IRON.

From E. and W., Grand View, Montana.—We have taken the job of lining the tank for the water works here with No. 28 gauge galvanized iron. The tank is 12 feet in diameter by 18 feet deep. We would be glad if *The Metal Worker* would advise us what size sheets to use, and how the difficulty of soldering the upright seams can be overcome.

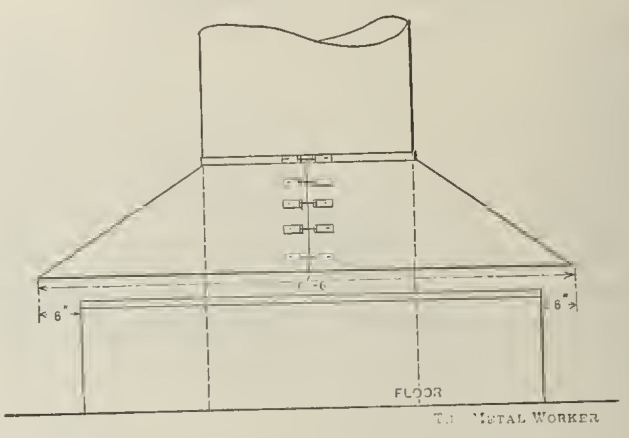


Lining Tank with Galvanized Iron.

Answer.—We would advise our correspondent to use No. 24 gauge galvanized iron for a large tank of the above size, in sheets 36 x 96 inches in size, locking the horizontal and vertical seams and thoroughly soaking the seams with solder. When lining the tank, it can be started at the top, as shown in the accompanying illustration, flanging out at the top and nailing, as shown at B, interlocking each successive sheet, as shown at A. This brings the lock opening toward the top. Then, with a hot heavy copper, using muriatic acid as a flux and half and half solder, thoroughly soak the seam with solder. By having the lock as at A the seams can be well soldered, using the edge of the lock as a guide for the copper. The upright seams are soldered in the usual manner, being careful to forge the coppers wedge shape, as shown at C, about 1½ inches wide and ¼ inch thick at the end. They should be tinned on one side and the end only; if tinned otherwise—that is, on three or four sides—the solder, instead of remaining on the tinned side would flow downward. By having the copper tinned on the one side only the remaining sides are black, and do not tend to draw the solder downward. It is better to go over the upright seams twice, so as to get a good tight joint.

A DISPUTED BILL.

From J. B., Brooklyn, N. Y.—I should be glad to hear from the readers of your valuable paper in reference to the following experience: The owner of a building in course of erection wished to have a galvanized sheet iron umbrella cover made to fit a smoke stack, which was at the time lying in a vacant lot near the building in two sections. In giving the order to have the umbrella cover made the owner gave the measurements of one end of the stack as 30 5-16 inches, but he failed to mention that the smoke stack was flatened on each side so as to reduce the diameter 5-16 inch at each side at the point where it passed through the roof. He also failed to mention that he was having the smoke stack run up 6 inches to one side of the center of the opening in the roof of the building. The man who built the stack and erected it, in giving the order for the umbrella cover gave no information further than that it was to be a cone cover 6 feet 6 inches in diameter at the bottom, the order being a verbal one. The owner expected that when the work was completed it would be arranged as shown in Fig. 1, while through negligence in properly placing the order it was as shown in Fig. 2. On presenting the bill for the work he refused to accept it. I should like to know who is to blame?



A Disputed Bill.—Fig. 1.—The Finish Expected.

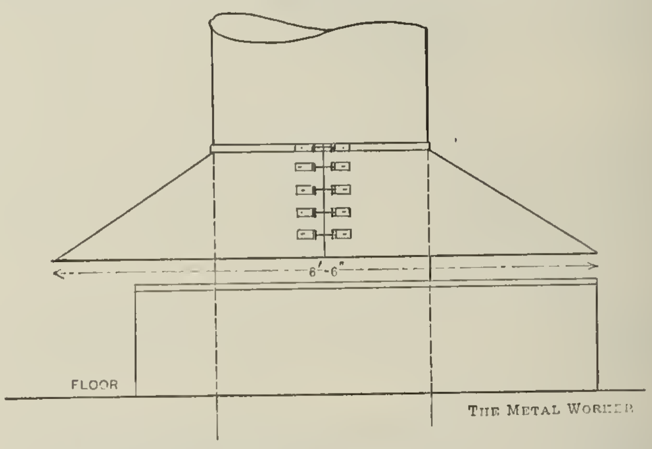


Fig. 2.—The Unsatisfactory Finish Due to Error in Giving Order.

WANTS "ESSAYS ON HOUSE HEATING."

From T. J. Grier, Post Office Box 84, Martin's Ferry, Ohio.—I am desirous of procuring a well preserved copy of "The Metal Worker Essays on House Heating," and shall be glad to hear from any reader who has a copy that he is willing to sell, stating the price.

ADDRESS WANTED.

From T. F. Clark, Box 303, Danville, Ky.—I desire to secure information as to the whereabouts of Richard McAuliffe, a steam fitter, well known in the trade as "Dick." He was formerly in Chicago, Ill., and his parents resided at Columbus, Ohio. He worked in Memphis, Tenn., and was last heard of in Birmingham, Ala. If he will write to me he will learn of something to his interest.

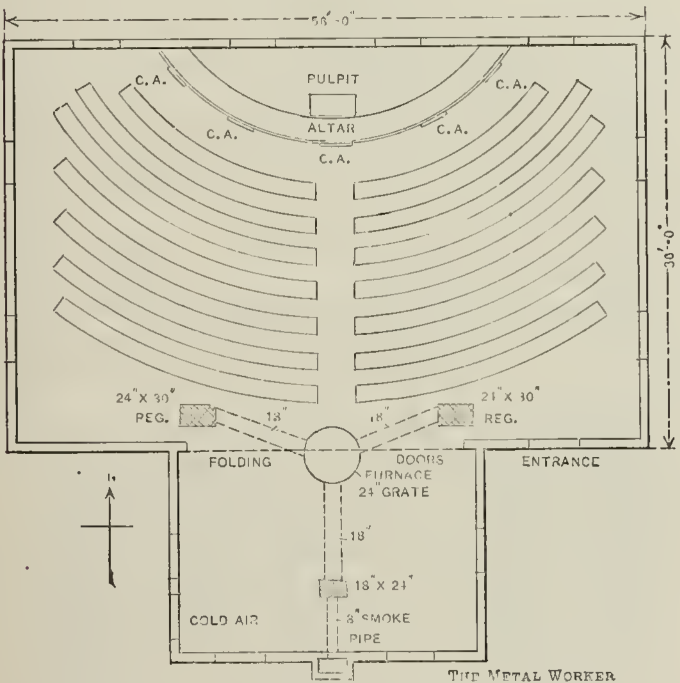
ZINC RODS BREAK.

From F. B., New York.—I would like to know what causes zinc rods to break very easily ? I have cast some in a mold to use in batteries for experimental work. but they seem to be very brittle, while those bought are tough and hard. I use only pure zinc, melting it in an iron pot, with a charcoal furnace. Is there any metal or alloy that can be put in the zinc which will harden it, and not interfere with its service in the electrical battery ? Any information which the readers of *The Metal Worker* can give will be appreciated.

Answer.—Pure zinc has considerable strength, and is strong enough for battery purposes. There is no alloy or other metal that will strengthen it that is permissible for battery use. Mercury is used, but it makes the zinc of less strength. We fear that the zinc used by our correspondent was not pure, or even commercial zinc. If old battery zinc was used, which might be thought pure, it may have been the cause of the trouble, as such zinc is usually amalgamated with mercury.

SCANT AIR SUPPLY HINDERED HEATING.

From L. P. C., Leipsic, Ohio.—Will *The Metal Worker* or some of its readers advise me why the heating system arranged as shown on the plan herewith will not heat the church ? The only register that shows a good flow of hot air is the one in the Sunday school room above the furnace. The other two hardly show any flow of hot air at all, notwithstanding that the smoke pipe gets red hot and a great deal of fuel is consumed without benefit. It was designed and put in by a Cincinnati house, and the original intention was to take the air from the church through registers placed in the risers leading to the altar, but this was afterward changed, as it would not work. The air is now taken from outside. The floor at the pulpit is about 2 feet lower than at the hot air registers. I believe that the smoke pipe is too small, as it is but 12 feet long.



Scant Air Supply Hindered Heating.

Note.—No doubt some of our furnace readers can give valuable information which will assist this inquirer. In the meantime, we would suggest that the air supply seems to be insufficient. There are three 18-inch hot air pipes, which seem pretty large to be supplied from one furnace having a 21-inch fire pot, as their area is 254 square inches each, with a total of 762 square inches. The size of the registers at the pulpit is not given, nor is the size of the fresh air supply duct. The outside measurements of the registers at the pulpit should have provided an area of twice the 762 inches, in order to allow for the obstruction due to the fret work in the register face and the obstruction due to friction. These registers should then connect into a duct not less than 20 x 40 inches, or of at least 800 square inches capacity, leading back to the furnace. The cold air box from out of doors should be of the same size, and at no point should the area be reduced. For heating churches, it is well to take the air from the church building before the congregation assembles, then to use the air from out of doors. Such heating systems are more likely to provide a comfortable temperature than when the entire air supply is taken from out of doors. Judgment should be used in the regulation of the air supply, so that as soon as the congregation assembles the inside air supply should be shut off and the outside supply used. It also seems that the furnace used is not as large as would be desirable from the size of the building and the location of the furnace in it.

WHAT WILL REMOVE THE SOOT?

From C. H. R., Catskill, N. Y.—I have a customer who has a hot water heater in which he has burned a large quantity of wood, which has formed a black, sticky substance all over the flues. I should like to know what will remove this substance, and whether there is anything that can be burned in the heater that will remove it ? I hope that some of the readers of *The Metal Worker* who have had experience will give me the benefit of their views.

Which Way Pocket Level.

E. G. Smith, Columbia, Pa., is manufacturing the Which Way pocket level, shown herewith, which is now being brought to the attention of the trade. The level is about the diameter of a silver dollar and ⅜ inch thick. It is referred to as made from solid steel and

Which Way Pocket Level.

nicely nickeled. The lens is ground glass. Special attention is called to the sensitiveness of the level, and the manufacturer remarks that it does not matter which way the work is out, the level will show it. The level is guaranteed not to leak.

To Judge a River's Breadth.

It is necessary to make use only of the eyes and the brim of a hat to measure the width of any ordinary stream, or even of a good sized river, and here is the way to do it, says the Detroit *Free Press:* Select a part of the river bank where the grounds run back level, and, standing at the water's edge, fix your eyes on the opposite bank. Now, move your hat down over your brow until the edge of the brim is exactly on a line with the water line on the other side. This will give you a visual angle that may be used on any level surface, and if, as has been suggested, the ground on your side of the river be flat, you may " lay off " a corresponding distance on it. To do this you have only to hold your head perfectly steady, after getting the angle with your hat brim, supporting your chin with your hand. if necessary, and turn slowly around until your back is toward the river. Now, take careful note of where your hat brim cuts the level surface of the ground as you look over the latter, and from where you stand to that point will be the width of the river—a distance that may readily be measured by stepping. If you are careful in all these details you can come within a few feet of the river's width.

TRADE REPORT.

MARKET SUMMARY.

Pig Tin rules about ½c. lower, and is quiet, though firm.

Copper has softened about ¼c. in price and is very dull.

Pig Lead is quiet and unchanged.

Spelter remains quiet and a trifle weaker.

Antimony is unchanged.

Nickel is active and without change.

Aluminum is firm and in good demand.

Tin Plates are quiet, with prices unchanged and firm.

Sheets continue in heavy demand; prices strong, with upward tendency.

Scrap Iron is easier on a less urgent demand and larger supplies.

Foundry Iron is scarce to the point of famine in some quarters, and prices are higher.

Sheet Copper is in heavy demand, with prices firm.

Sheet Zinc is without change.

Hardware is moving in good volume, although orders are not so heavy; prices remain strong.

Plumbers' Supplies are active, with prices firm in all lines.

Wire Nails continue in good demand, with prices strong and assortments broken.

Cut Nails are in similar condition to Wire Nails.

White Lead is in good demand at unchanged prices.

Linseed Oil has been advanced 3c. a gallon.

Spirits Turpentine is ½c. a gallon lower, with limited demand.

METAL MARKET.

New York, April 25, 1902.

Pig Tin.—Prices of Pig Tin in London fell rapidly in the early part of the week as the result of a halt in the bull movement there. There was an accompanying decline here, but it was not as marked as in London. Business has been very limited, buyers purchasing only such amounts of material as they absolutely need for present requirements. On Thursday the decline was checked and a decided improvement in the tone of the market set in, leaving it at the close firmer than for some days previous. Jobbers' prices are about ½c. below those ruling at the date of our last report, Straits Pig in small lots being quoted at about 29c. to 29½c. per lb. Arrivals of Pig Tin this month have been very heavy, the total so far being over 3500 tons. It is predicted that the arrivals for the entire month will reach fully 4200 tons. These figures leave no room for apprehension over a possible scarcity of supplies in this country. The fact that consumers here are buying so sparingly is evidently caused by the feeling that there will be plenty of Tin to tide them over until the situation has been cleared.

Copper.—An irregular market has prevailed throughout the week, with a general tendency downward. Purchases were confined entirely to small lots, as the bulk of consumers are still well supplied with Copper bought at lower prices. Lake Ingot in small lots is quoted at about 13c. to 13½c. per lb., and Casting Copper at 12¾c. to 13c.

Sheet Copper.—Manufacturers of Sheet Copper report a very active demand for this material, coming from all the various interests that use Sheet Copper. A considerable increase over former seasons is noted in the demand for Sheet Copper for architectural purposes. Much of this material is being put into the large new buildings that are now being erected in various parts of the country. The mills generally are running to their full capacity. Manufacturers, apparently, are not anxious to book orders for very long deliveries, and are understood to be unwilling to accept contracts for delivery beyond three months at present prices. Prices are very firm on the basis of 18c. per lb. for Sheet Copper from store.

Pig Lead.—No change is noted in this market, which remains dull and uninteresting, but steady at former prices. American Pig in small lots is quoted at 4.45c. to 4½c. per lb. St. Louis advices report a quiet condition of the Pig Lead market at that center, with no change in prices since last week.

Spelter.—The market for Spelter is without change. Consumers are still buying from hand to mouth. In some quarters it is held that the tone of the market is a little easier, but there has been no change whatever in prices. Small lots of good Western brands rule at about 4.60c. to 4.70c. per lb. St. Louis advices report transactions in the Spelter market there as of a lighter order, with a general quietness ruling and no change in quotations.

Sheet Zinc.—A fair demand for Sheet Zinc is reported, with prices at the same figures ruling for a long time past—viz., 6¾c. per lb. for 600-lb. cask lots, and 7c. to 7¼c. for smaller quantities.

Antimony.—The market for this metal is unchanged, Hallett's in small parcels is quoted at 8⅝c. to 8¾c. per lb., United States at 8⅜c. to 8½c., and Cookson's at 10¼c. to 10¾c.

Nickel.—The situation is unchanged. Small lots are quoted at about 55c. per lb.

Aluminum.—The demand continues good, and prices are without change. Small lots of No. 1 Ingot guaranteed 99 per cent. pure are quoted at 37c. per lb., and 100-lb. lots at 35c.

Tin Plates.—The market for Tin Plates is entirely unchanged. The American Tin Plate Company are quoting for delivery until October 1 at the prices which have ruled for the past year. No increase in the amount of new business is reported, although deliveries from mills are still being made on a heavy scale. These, however, are mainly on contracts previously placed. Most of the large consumers are said to have covered their wants for some little time to come. The retail trade is rather quiet. Prices are firm and unchanged. American Bessemer Coke Plates, IC, 14 x 20, are quoted at about $4.85 to $4.95 per box for moderate sized lots, delivered at New York or corresponding points.

Sheets.—The demand for Sheets seems to be a little less pressing than it has been the last few months, but it is still quite heavy. The Sheet mills, as a whole, are comfortably filled for the next two or three months, and the market is very firm, with upward tendency. Some makers have advanced their quotations on Heavy Sheets. Some cutting of prices on Galvanized Sheets is reported in the retail trade in the East, but this has not affected the general market prices to any noteworthy extent. Jobbers quote No. 27 One Pass Cold Rolled Soft Steel Sheets at about 3.85c. to 3.90c., and Galvanized Sheets at 70 to 70 and 2½ per cent. off the list.

Chicago advices are as follows: The buying of Sheets has continued liberally, checked only by the inability of the mills to make deliveries. One feature of the week has been the buying of Light Sheets for implement purposes. A strong and confident tone prevails with full prices realized, and in some instances advances asked and obtained, but trading is mainly in small quantities for early delivery. Heavy Sheets have been advanced about $3. Small lots of No. 27 Black Sheets from store are quoted at 3.45c. to 3.55c. Galvanized Sheets are quoted at net prices, small lots from store being held at 4.70c. to 4.75c. for No. 27.

Old Metals.—Stocks of Scrap Iron are increasing, and the demand is not so active. Prices are somewhat weaker. Scrap Brass and Copper have also weakened in price on lighter demand. Dealers are paying about the following rates for moderate sized lots, delivered at New York or corresponding points:

Heavy Copper	per lb. 10 c.
Light and Tinned Copper	per lb. 8½c.
Heavy Brass	per lb. 8 c.
Light Brass	per lb. 6¼c.
Lead	per lb. 3⅝c.
Tea Lead	per lb. 3¼c.
Zinc	per lb. 2⅞c.
Pure Aluminum Sheet	per lb. 25 c.
Cast Aluminum	per lb. 20 c.
No. 1 Pewter	per lb. 15 c.
No. 2 Pewter	per lb. 8 c.
Tin Plate Scrap, per gross ton	.... to $5.00
Wrought Iron Scrap, per gross ton	$13.00 to 13.50
Heavy Cast Scrap, per gross ton	12.00 to 12.50
Stove Plate Scrap, per gross ton	8.50 to 9.00
Burnt Iron, per gross ton	7.00 to 7.50

THE PIG IRON MARKET.

New York.—Beyond moderate sales for early delivery, at fancy prices, very little new business is being done in Pig Iron. There are reports relating to the importation of moderate quantities of foreign Foundry Iron. The market continues exceedingly strong. We quote for forward delivery, Northern Irons: No. 1, $20.50 to $21; No. 2 X, $19.25 to $19.75; No. 2 Plain, $18.75 to $19.50, at tidewater. Tennessee and Alabama brands are as follows: No. 1 Foundry, $19.50 to $20.50; No. 2 Foundry, $18.75 to $19.

Chicago. Strength continues to be the prominent feature of the Pig Iron market. Although the official Southern base price is unchanged, there has been an advance of 50c. per ton in the actual trade prices for both local and Southern Irons. In some instances Northern Iron has been sold at $1 to $2 higher, and even greater premiums have been demanded and paid for Iron for immediate and nearby delivery. The volume of business, however, has been restricted within relatively narrow limits, there being but little Iron available for prompt shipment, and the majority of large melters having covered their wants for the remainder of the year. The current demand is mainly, if not entirely, for Foundry Iron. While the official prices of the leading Southern companies remain based upon $12, Birmingham, for No. 2 Foundry Iron, actual business is done at $3 per ton higher. The following f.o.b. Chicago quotations are therefore given on the basis of actual transactions:

Lake Superior Charcoal	$21.50 to $22.25
Local Coke Foundry, No. 1	19.50 to 20.00
Local Coke Foundry, No. 2	19.00 to 19.50
Local Coke Foundry, No. 3	18.50 to 19.00
Local Scotch, No. 1	19.00 to 19.50
Ohio Strong Softeners, No. 1	21.10 to 21.35
Southern Silvery, according to Silicon	19.90 to 20.40
Southern Coke, No. 1	19.40 to 19.90
Southern Coke, No. 2	18.65 to 19.15
Southern Coke, No. 3	18.15 to 18.65
Southern Coke, No. 1 Soft	19.40 to 19.90
Southern Coke, No. 2 Soft	18.65 to 19.15

Philadelphia.—Pig Iron prices are certainly no lower, and the general trend appears to be toward higher figures. There is a firmer tone for long deliveries, and the quotations for the third quarter of the year are coming closer to those for the second quarter. Those who must secure Iron for prompt shipment are obliged to pay a sharp premium over ruling prices. No. 2 X Foundry has been sold at anywhere from $19.75 to $20.50, and even as high in some cases as $21. For shipment during the last half of the year $20 is about the extreme limit, and from that down to $19. For the last three or four months $18.50 to $18.75 might perhaps be done. The feeling is rather confident and sellers are not urging sales, but where customers insist on definite figures the above are about correct. Some makers decline to fix a price other than "price at time of delivery." The present prices would be about as follows for Philadelphia and nearby points:

	Deliveries to July.	Deliveries July to December.
No. 1 X Foundry	$20.50 to $21.50	$20.00 to $21.00
No. 2 X Foundry	19.75 to 20.50	18.50 to 19.00
No. 2, Plain	19.00 to 19.25	17.75 to 18.25

Pittsburgh.—Sales of Pig Iron are confined wholly to small lots and almost any price can be had for Iron for shipment prior to July. No. 2 Foundry for nearby shipment is quoted at $20.50 to $21, Pittsburgh. There is practically no Bessemer Iron to be had for delivery in the next two or three months.

Cincinnati.—Sales of Iron, either Northern or Southern, in this section have been limited in both size and number. Throughout the territory tributary to Cincinnati business has been exceedingly quiet, not on account of lack of customers, but because the Iron is not in sight with which to supply the demand for prompt delivery. There are some authorities here who think the market will not stop short of $18, Birmingham, for No. 2 Foundry, while others feel sure the market will go but little, if any, higher than it is to-day. Several sales of Southern No. 2 are reported for delivery east of Pittsburgh on the basis of $16, Birmingham. Northern Coke Irons are advancing and are booked to go still higher. We quote as follows, f.o.b. Cincinnati:

Southern Coke, No. 1	$18.00 to $18.50
Southern Coke, No. 2	17.50 to 18.00
Southern Coke, No. 3	17.00 to 17.50
Southern Coke, No. 4	16.50 to 17.00
Southern Coke, No. 1 Soft	18.00 to 18.50
Southern Coke, No. 2 Soft	17.50 to 18.00
Southern Coke, Gray Forge	16.50 to 17.00
Southern Coke, Mottled	11.00
Ohio Silvery, No. 1	20.60 to 21.10
Ohio Silvery, No. 2	20.10 to 20.60
Lake Superior Coke, No. 1	21.10 to 22.10
Lake Superior Coke, No. 2	20.10 to 21.10
Lake Superior Coke, No. 3	19.10 to 20.10

St. Louis.—Quietness has settled down upon the Pig Iron market at this point, and while quotations are being made the amount of material on hand of all grades is extremely light. The wide range of prices is apparent. Practically no quick delivery Iron is available here and the offerings for delivery several months hence are not of large volume. Sales and offerings of No. 2 Foundry come to our notice at the extreme price of $19.25, f.o.b. St. Louis. We quote for cash, f.o.b. St. Louis, as follows:

Southern, No. 1 Foundry	$16.00 to $19.00
Southern, No. 2 Foundry	15.25 to 18.25
Southern, No. 3 Foundry	14.75 to 17.75
Southern, No. 4 Foundry	14.25 to 17.25
No. 1 Soft	15.75 to 18.75
No. 2 Soft	15.25 to 18.75

CHICAGO REPORT.

Scrap Iron and Steel.—The market is quiet. The supply steadily grows larger, but prices are well held. We quote dealers' buying prices for carload lots, Chicago delivery, as follows:

	Per net tou.
Country Wrought Scrap	$14.00 to $14.50
Machinery Cast	.... to 13.00
Malleable Cast	12.00 to 12.50
Stove Plate (free from burnt)	10.00 to 10.50
Burnt Iron and Grate Bars	8.00 to 9.00
Sheet Iron and Hoops	8.00 to 9.00
Plow Steel	12.00 to 13.00
Breaking Stock	.... to 11.00
Old Boilers—whole (Iron)	9.50 to 10.00
Old Boilers (Iron) cut in single Sheets and Rings	12.00 to 12.50
Old Gas Pipe and Boiler Tubes	12.00 to 12.50
Cast Borings	7.00 to 8.00
Turnings	11.50 to 12.00
Horseshoes	14.00 to 14.50

Old Metals.—Consumers are buying sparingly, and are forcing prices down on Old Copper and Brass. Other metals are a trifle stronger. Dealers quote buying prices on small lots as follows:

	Per lb.
Copper Wire and Heavy	10¾c.
Copper Bottoms	9¾c.
Copper Clips	10½c.
Red Brass	11 c.
Yellow Brass	8¼c.
Red Brass Borings	10 c.
Yellow Brass Borings	7¼c.
Light Brass	6½c.
Pipe Lead	3.70c.
Tea Lead	3.35c.
Zinc	3 c.
Tin Foil	20 c.
Pewter, No. 1	17 c.
Pewter, No. 2	10 c.
Aluminum	20 c.

Old Rubber.—The quantity coming in is not as large, but the demand has not improved, and prices are unchanged. Dealers' buying prices are as follows:

	Per net ton.	Per lb.
Garden Hose	$25.00	.....
Air Brake Hose	42.00	.....
Rubber Shoes	....	6¾c.
Rubber Car Springs	....	5 c.
Inside Bicycle Tubing	....	22 c.
Outside Tubing	....	6⅛c.
Black Rubber	....	4 c.
White Rubber	....	8¼c.

Rags.—Stocks are very large, and prices are inclined to weakness. Good Country Mixed Rags, Chicago delivery, 70c. to 75c. per 100 lbs. in any quantity.

Anthracite Coal.—Buyers are covering their wants very freely at April prices, knowing that 10c. will be added May 1. A discount of 50c. is allowed on the following schedule for all coal shipped in April:

	Grate.	Egg and Stove.
Chicago	$5.75	$6.00
Milwaukee, Wis.	5.75	6.00
St. Louis	6.20	6.45
Kansas City, Mo	8.25	8.50

THE HARDWARE TRADE.

There is a perceptible diminution in the volume of orders which is coming in to the manufacturers. This feature of the market probably finds sufficient explanation in the fact that it is now between seasons so far as the buying of the larger trade is concerned. Most of the wholesale merchants have covered their requirements for spring and summer goods, and while it is necessary for them to write many letters to hurry up shipments, they do not need to place many new orders. The matter of jobbing consolidation has also probably had some influence in diminishing the demand. The relief which thus comes to manufacturers is not unwelcome. Most of them are crowded with orders and are obliged to run their factories overtime. An opportunity to clear their order books would be regarded with satisfaction by most of them, provided the relaxing of the demand is not to be interpreted as indicating the diminishing of consumption. Of this, fortunately, there is little sign. The industrial activities of the country continue to give employment to labor and indicate almost universal prosperity. There is certainly an unusual amount of building in progress and projected for the remainder of the year. In many lines of goods there is a marked scarcity. Prices generally are firmly maintained and show no indications of weakness. Advances have of late been far more frequent than declines. In the present state of the market there are, however, few changes in either direction, prices generally being held steadily.

NOTES ON PRICES.

Plumbers' Supplies.—The demand for Plumbing Supplies keeps up in good volume, and prices throughout the list are strong with upward tendency in some lines. The volume of business so far this year has been considerably above the average, and the outlook favors an uninterrupted condition of prosperity in this branch of trade with a satisfactory margin of profits.

Wire Nails.—New business in Wire Nails continues large, while the output of the mills is not up to the requirements of the trade. The tone of the market is firm and complaints of irregularity in prices are few. The local demand for Wire Nails in New York continues satisfactory and jobbers are experiencing some difficulty in keeping their stocks well enough assorted to supply the needs of the trade. Small lots from store are quoted at $2.30 per keg.

Cut Nails.—Cut Nails are in good demand, and the mills find some difficulty in turning out enough product to fill the requirements of the trade. Considerable difficulty is experienced by jobbers in keeping stocks well assorted. Small lots from store are quoted at $2.25 to $2.30 per keg.

White Lead.—Prospects for a large consumption of Lead are encouraging. The demand continues in good volume. Some competition is reported in White Lead in Oil, but retail quotations are unchanged at 6½ to 6¾ cents per pound.

Linseed Oil.—On April 17 prices of Linseed Oil were advanced 3 cents per gallon, City Raw in small lots being now quoted at 67 to 67½ cents. The demand is referred to as quite large at the advance. It is confined mainly to medium sized orders for consumption. The market is firm, with a possibility of a further advance in Oil in the near future.

Spirits Turpentine.—The price of Turpentine has fallen off during the week, owing to the light local demand. The demand is restricted to comparatively small lots by the painting trade. Small lots of Turpentine are quoted at 46 to 46½ cents per gallon. Advices from Savannah are to the effect that prices there have advanced ½ cent per gallon.

Coal Tar Products.—The plans of the new Coal Tar Products Association have been further extended by the organization of the territory embraced in the State of Maine. The care and detail with which it is covered indicates a definiteness of purpose that promises to regulate prices all over the country in this product as soon as the necessary details can be perfected. In Maine the trade is divided into ten sections, including sometimes one county and in other cases six counties, according to the volume of business, prices being quoted on both carloads and less than carloads, except as before in the case of Deadening Felt, Tin Caps, Nails and Rosin Sized Sheathing, which take the same rate in any quantity.

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ROOFING SUPPLIES, METALS, TIN PLATES, &c.

REVISED APRIL 25, 1902

Aluminum—

No. 1 Aluminum (guaranteed over 99% Pure), in ingots for remelting.

Small lots	⅌ ℔, 37¢
100-℔ lots	⅌ ℔, 35¢

Aluminum Sheet, B. & S. gauge.
In lots of 50 ℔s or more.

Wider than	6-in	14-in.	24-in.
And including	14-in	24-in.	30-in.
	⅌ ℔	⅌ ℔.	⅌ ℔.
Nos. 13 to 19	$0.42	$0.44	$0.47
" 20	.44	.46	.49
" 21 to 23	.46	.48	.51
" 24	.46	.50	.53
" 25	.47	.51	.54
" 26	.47	.54	.59
" 27	.48	.57	.62
" 28	.48	.57	.64
" 29	.49	.60	.69
" 30	.50	.64	.77

Note.—Lots of less than 50 ℔s 5¢ ⅌ ℔ extra.

Antimony—

Cookson	⅌ ℔. 10¼@10¾¢
Hallett's	⅌ ℔. 8⅝@8¾¢
U.S.	⅌ ℔ 8⅛@8½¢

Brass, Roll and Sheet...... 30%

Conductors—
Corrugated.

Round or Square.—

Galvanized ½ or more. N'st'd	70&5%
" Not Nested	70&2½%
" Plain Round, ½ or more, Nested	70&5%
Galvanized, Plain Round, Not Nested.	70&2½%

Spiral Riveted.

Galvanized	40%

See also *Elbows and Shoes; Eave Trough Miters; Strainers, Conductor.*

Conductor Strainers—

See *Strainers, Conductor*

Copper—

Lake Ingot	13 @13½¢
Casting	12¾@13 ¢
Sheet and Bolt	18¢ ⅌ ℔ basis
Cold Rolled Sheets	19¢ ⅌ ℔ basis
Cold Rolled and Polished Sheets	20¢ basis
Planished Sheets	21¢ basis
Bottoms, Pits and Flats	⅌ ℔ 22¢ basis

Eave Trough Galvanized

Territory	L. C. L.
Eastern	75&10%
Central	75&7½%
Southern	70&12½%
S. Western	70&10%

Terms, 2% for cash.

Eave Trough Mitres—

Lap or Slip Joint	list, 25%

Elbows—Plain Adjustable—

Eastern List.

Tin	30%
Galvanized	30%
Perfect Elbows	40%

Stove Pipe—

Four-Piece

	4	4½	5	5½	6-inch.	
No. 1.	$0.80	.85	.90	1.00	1.05	per doz.
No. 2.	.65	.70	.75	.80	.85	"
No 3.	.60	.63	.65	.70	.80	"

Elbows and Shoes—

Galvanized	60%

Gasoline—

See *Petroleum Products.*

Iron Sheet—*Black.*

	One Pass, C. R., Soft Steel.	R. G. Cleaned.
Nos. 14 to 16	⅌ ℔. 3.50	3.55¢
Nos. 18 to 21	⅌ ℔, 3.60	3.65¢
Nos. 22 to 24	⅌ ℔, 3.70	3.75¢
Nos. 25 and 26	⅌ ℔, 3.80	3.85¢
No. 27	⅌ ℔, 3.90	3.95¢
No. 28	⅌ ℔, 4.00	4.05¢

Russia, Planished, &c.

Genuine Russia, according to assortment	⅌ ℔ 11@14 ¢
Do. Stained	6@10½¢
Patent Planished	⅌ ℔ A, 11¢; B, 10¢ net

Galvanized.

Nos. 10 to 16	⅌ ℔, 12¢	70@70&2½% off
Nos. 17 to 21	⅌ ℔, 13¢	
Nos. 22 to 24	⅌ ℔, 14¢	
Nos. 25 to 26	⅌ ℔, 15¢	
No. 27	⅌ ℔, 16¢	
No. 28	⅌ ℔, 17¢	
No. 29	⅌ ℔, 19¢	
No. 30	⅌ ℔, 21¢	

36 in. 1¢ ⅌ ℔ higher.

Lead—

American Pig		4.45@4½¢
Bar		5@5¼¢
Pipe	6½¢	20% off
Tin Lined Pipe	12½¢	20% off
Block Tin Pipe	35 ¢	20% off
Sheet Lead	7¼¢	20% off

Old Lead in exchange, 3¼¢ ⅌ ℔.

Mitres Eave Trough—

See *Eave Trough Mitres.*

Nickel—

Per ℔	55@60¢

Paints, Oils &c.—
Leads—

Lead, American White, in Oil ;	
Lots of 500 ℔ or over	6¼ @ 6½
Lots less than 500 ℔	6½ @ 6¾
Lead, White, in oil, 25 ℔ tin pails, add to keg price	@ ½
Lead, White, in oil, 12½ ℔ tin pails, add to keg price	@ 1
Lead, White, in oil, 1 to 5 ℔ assorted tins, add to keg price	@ 1½
Lead, White, Dry in bbls	5¾ @ 6
Lead, Red, bbls., ½ bbls. and kegs :	
Lots 500 ℔ or over	@ 6
Lots less than 500 ℔	@ 6½

Oils—

Linseed, City, raw ⅌ gal.	67@67½¢
Linseed, City, boiled	69@69½¢
Linseed State and West'n, raw	66@66½¢

Spirits Turpentine—

In Southern bbls	46 @46½¢
In machine bbls	47 @47½¢

Putty—

In bulk	$1.25
In bladders	2.25
In cans 12 ℔ to 25 ℔	2.25
In cans 1 ℔ to 5 ℔	3.25

Petroleum Products—

In Barrels (Barrel Included)

Stove Gasoline ⅌ gal.	10½@11¢
Kerosene ⅌ gal.	12@13¢

Pipe Drain...... 40%

Pipe, Spiral—

See *Conductors.*

Registers—

List Sept. 2, 1901.

Black Japanned	60&10@60&10&5%
White Japanned	60&10@60&10&5%
Nickel Plated	60&10@60&10&5%
Bronze Finishes in Imitation of Gold, Silver, Copper or Bronze	60&10@60&10&5%
Electroplated in Brass, Bronze or Copper	60&10@60&10&5%
White Porcelain	60%
Solid Brass and Bronze Metal	50%

Roofing Material—

1 Ply Tarred Paper. ⅌ ton	$31.00@32.00
2 Ply Tarred Paper... ⅌ roll, 108 sq. ft.	55@60¢
3 Ply Tarred Paper.. ⅌ roll, 108 sq. ft.	80@85¢
Slater's Felt ⅌ ton,	$35.00@36.00
Roofing Pitch ⅌ bbl.	$2.50

Rosin—

Common and Good—Strained.

Rosin, C. & D. ⅌ bbl.	$1.62½@$1.65
Rosin, E. & F. ⅌ bbl.	1.70 @ 1.75
Rosin, G. & H ⅌ bbl.	1.80 @ 1.85
Rosin, I. & K ⅌ bbl.	2.10 @ 2.70
Rosin, M. & N. ⅌ bbl.	3.05 @ 3.55

Shoes and Elbows—

See *Elbows and Shoes.*

Slate Roofing—

f. o. b. cars, Quarry Station.

	According to size.
Pennsylvania:	
Best Bangor, ⅌ sqr	$3.25@$4.50
No. 1 Bangor Ribbon, ⅌ sq	3.00@ 3.50
Pen Argyle, ⅌ sqr	3.00@ 3.75
Peach Bottom, ⅌ sqr	4.85@ 5.60
No. 1 Boys, ⅌ sqr	3.35@ 3.55
No 1 Chapman Keystone, ⅌ sqr	3.25@ 4.25
Vermont:	
Sea Green, ⅌ sqr	$2.00@$3.25
Purple, ⅌ sqr	3.75@ 4.25
Unfading Green, ⅌ sqr	3.25@ 4.50
Red, ⅌ sqr	7.00@11.00
Maine:	
Brownville, Unfading Black.	
No. 1 quality	$5.25@7.50
No. 2 quality	$4.25@6.00

Solder—

½&½ guaranteed	18½@19 ¢
No. 1	16 @17½

Prices of Solder indicated by private brands vary according to composition.

Soldering Fluids—

	Per Pound. Barrels	Per Pound. Smaller Q'ntities
Concentrated Flux	4c	5c
Eureka Flux :		
Triple Strength	3c	3½c
Extra Concentrated	4½c	5c
Crystal	..	7c
Gedney's Fluid	2c	2c
Lennox Fluid	2c	3c
Perfection Flux	3c	3½@4c
Yager's Salts, 1 lb. bottles		each, 50¢
5 lb. bottles, per lb., 45¢		

Soldering Coppers—

Per ℔	20@22¢

Spelter—

Western Spelter	4.60@4.70¢

Spiral Pipe—

See *Conductors.*

Stove Pipe Elbows—

See *Elbows, Stove Pipe.*

Stove Trucks—

See *Trucks, Stove.*

Strainers, Conductor—

Galvanized	50%

Tin Pigs and Bars—

Banca, pigs. ⅌ ℔	29 @29¼¢
Straits, pigs, ⅌ ℔	29 @29¼¢
Straits, in bars, ⅌ ℔	30 @30¼¢

Tin Plates, American
Charcoal Plates, Bright—

N. B.—The price of 20 x 28 sizes double the price of 14 x 20.

Calland Grade:		
IC,	14 x 20	$7.50
IX,	14 x 20	9.00
IXX,	14 x 20	10.25
IXXX,	14 x 20	11.50
IXXXX.	14 x 20	12.75
Melyn Grade:		
IC,	14 x 20	7.00
IX,	14 x 20	8.50
IXX,	14 x 20	9.75
IXXX,	14 x 20	11.00
IXXXX	14 x 20	12.25
Allaway Grade:		
IC,	14 x 20	6.50
IX,	14 x 20	7.60
IXX,	14 x 20	8.70
IXXX,	14 x 20	9.80
IXXXX.	14 x 20	10.90

Coke Plates, Bright—

Bessemer Steel, or equal to J. B. Grade, full weight	IC, 14 x 20	$4.90@5.00
" "	IX, 14 x 20	$6.00

N. B.—The reduction per box on lighter Plates than IC, 14 x 20, is as follows :

100 ℔	15¢
95 ℔	20¢
90 ℔	25¢
85 ℔	30¢

Terne Plates—

N. B.—The following prices are for IC 20 x 28, the rate for 14 x 20 being half as much. IX is usually held at $2 per box advance for 8 to 10 ℔ coating and $2.50 to $3 advance for 15 ℔ and upward.

About 40 ℔ coating	$16.00@16.50
About 30 ℔ coating	15.25@15.75
About 20 ℔ coating	13.25@13.75
About 15 ℔ coating	11.25@11.75
About 8 ℔ coating	@10.00

Boiler Plates, American—

IXX, 14 x 26..(112 sheets)	$12.50
IXX, 14 x 28..(112 sheets)	13.50
IXX, 14 x 31..(112 sheets)	15.00

Troughs Eave—

see *Eave Trough.*

Trucks, Stove—

Improved Lock Frame, per doz	$15.00
Steel Lock Frame, per doz.	18.00
Daisy Improved pattern, ⅌ doz	18.00

Tubes and Tubing—

Brazed Brass, List June 6, 1893	40%

Copper and Bronze, 8c per lb. list more than Brass.

Seamless Brass Tubes, net list Feb 1899

Tin	50%
Galvanized	50%
Fittings for do	40%

Zinc—

600 ℔ casks ⅌ ℔	6¾¢
Per ℔	7¼¢

PLUMBERS' AND STEAM FITTERS' SUPPLIES.

Boilers, Galvanized—

Standard Boilers:	
30 gal	70&10%
35 and 40 gal	70%
Other sizes up to 52 gal	60@60&10%
52 gal. and above	60%
Extra Heavy Boilers :	
18 to 52 gal	60%
53 gal. and above	55%

Brass Work, Plumbers'—

List of December 7, 1896.

Compression:	
Basin Cocks	65%
Bath Cocks and Double Bath Cocks	65%
Bibs.	65%
Bibs, Flanged	65%
Fuller:	
Bibs	70%
Basin Cocks, Nos. 1 to 4	70%
Bath Cocks, No. 4½	$2.40 each net
Ground Key Work:	
Finished Bibs	55&5%
Rough Bibs	70%
Rough Stop and Stop and Waste Cocks	70@70&5%
Rough Stop and Stop and Waste Cocks, Patented	65@65&5%

Miscellaneous—

Basin Clamps	60@65%
Basin Plugs	60@65%
Chain Stays.	60&5@70%

Iron Boiler Couplings:

	Lead Pipe.	Iron Pipe.
Plain Face.. ⅌ set	$0.95	$1.05
Ground Face ⅌ set	$1.00	$1.10

Sink or Bath and Wash Tray Plugs	60@65%
Soldering Nipples	70&5@75%
Soldering Unions	70&5@75%
Union Elbows, Hot Water Heating	75@75&15%

Cocks, Valves, &c.—
Cocks—
Brass—

Air and Radiator Air	75@75&5%
Gas Meter and Union Meter	65@70%
Steam	65@70%

Iron—

All Iron	70@70&10%
Iron with Brass Plugs	65@70%

Valves—
Brass—

Check	65@70%
Garden Hose	65&10@70%
Gate	65@65&10%
Globe and Angle, hose outlet	65@65&10%
Globe, Angle and Cross	65&10@70&5%
Horizontal, Vertical and Angle Check	65@65&10%
Hot Water Radiator	75%
Radiator	70&10%
Safety	65%
Safety, Low Pressure	65%
Jenkins' Disc:	
Check	65%
Gate	65%
Globe, Angle and Cross	70%
Radiator	80%
Radiator, Corner	75%
Safety	65%

Iron—

Iron Body	70@70&5%
Foot	65@70%
Jenkins Bros.':	
All Iron, except Gate	40&5%
All Iron Gate	35@40%
Iron Body, except Gate	60%
Iron Body Gate	50@50&5%
Swing Check	50%

Earthenware—

Brown Glazed Wash Tubs	20%
Brown Glazed Sinks, Kitchen and Pantry	20%
Basins, Urinals and Hoppers	45%
Closet Bowls, Sundries, Washouts and Pedestals	50%

Fittings—
Brass Fittings—

Finished	70@75%
Rough	70@75%
Bushings	70@75%
Nipples	70@70&2½%
Unions, Rough and Finished	70@70&5%

Iron—

Cast Iron Fittings, Black and Galvanized, Standard sizes	65@70%
Cast Iron Bushings and Plugs	65@70%
Cast Iron Flanges	65@70%
Cast Iron Floor Flanges	65@70%
Malleable Iron Fittings (from ℔ list)	50%
" " Bushings	65@70%
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" " Unions, Flange	60&10@70%
" " Pipe Hangers, Universal	50%
Wrought Iron Nipples	65@70%
" " Couplings	60@65%
" " Long Screws	60@65%

Lavatories—

Porcelain Enameled Iron	30@30&10%

Oakum—

Plumbers' Oakum, 50 lb. bales, ⅌ ℔	2½¢

Pipe—
Brass, Iron Pipe Size—

⅛	¼	½	¾ to 3 inch
$0.38	.34	.29	.23 ⅌ ℔

Cast Iron Soil—

List Feb. 25, 1901.
2 to 6 inch inclusive.

Standard	50&5%
Extra Heavy	60&7½%
All Fittings	65&10%

7 to 15 inch.

Pipe and Fittings, Standard and Extra Heavy	50%

Wrought Iron—

List Feb. 15, 1900.

	Black.	Galv
⅛ to ½ inch	55%	41%
¾ to 12 inch	65%	50%

Radiators—

Standard List.

Steam	50&2½%
Hot Water	50%

Sinks, Etc.— Cast Iron—

	Black	Galv
Sinks, Square, Half Round and Corner	60@65%	60@65%
Sink Legs.	60%	60@65%
Sink Backs	60%	60@65%
Boiler Stands, Cast Iron	60@60&10%	
Cesspools, Cast Iron	60%	

Wrought Steel Sinks—

New Era, Galv'd and Enameled.	70&5%
New Era, Painted	50&10%
L. & G.	50%

Traps—

Drawn Lead Traps, List June 3, 1901	50&5%

Tubs, Bath—

List April 1, 1902.

Cast Iron Enameled Bath Tubs.	
Regular Patterns. Guaranteed	30%
All Special Patterns	15%
Solid Copper, list of Feb. 1. 1899	40%
Solid Porcelain—Class A, 30%; B, 40%; C, 50%.	
Steel Clad Copper Lined, list of Feb. 1. 1899	50@55%

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New York Iron Roofing & Cor. Co., Jersey City, N. J.

Roofing Nails.
Salem Nail Co., 279 Pearl St., N.Y.

Roofing Slate.
Auld & Conger Co., Cleveland, O.
Bray, J. & Co., E. Bangor, Pa.
Galt, John & Sons, 253 Broadway, N.Y.
Genuine Bangor Slate Co., Easton, Pa.
Johnson, E. J. & Co., 38 Park Row, N.Y.
O'Halloran & Jacobs, Pittsburgh, Pa.

Sap Spouts.
Millar, C. & Son Co., Utica, N. Y.

Screens.
Harrington & King Perforating Co., Chicago, Ill.

Screws.
Hubbell, Harvey, Bridgeport, Ct.

Sewer Pipe.
Rutland Fire Clay Co., Rutland, Vt.

Shaped Iron and Steel, Galvanized.
Am. Galvanizing Wks., Chicago, Ill.

Shears, Sheet Metal
Heartley Machine Variety Iron & Tool Works, Toledo, O.
McSherry, Chas., Pittsburgh, Pa.
Peck, Stow & Wilcox Co., 27 Murray St., N. Y.

Sheet Metal Machinery.
Bertsch & Co., Cambridge City, Ind.
Bliss, E. W. Co., Brooklyn, N. Y.
Clough, R. M., Tolland, Conn.
Double Truss Cornice Brake Co., Buffalo, N.
Heartley Machine Variety Iron & Tool Works, Toledo, O.
Keene, Geo. C. & Co., Cincinnati, O.

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Miner & Peck Mfg. Co., New Haven, Conn.
Niagara Machine & Tool Wks., Buffalo, N. Y.
Ohl, Geo. A. & Co., Newark, N. J.
Peck, Stow & Wilcox Co., 27 Murray St., New York.
Phila. Machine Tool Co., Phila., Pa.
Pocock, O., Cincinnati, O.
Poorman Mfg. Co., Piqua, O.
Robinson, J. M. Mfg. Co. Cincinnati, Ohio.
Stiles & Parker Press Co., Brooklyn, N. Y.

Sheets, Aluminum Coated Steel.

Steel & Iron Aluminum Coating Co., Connellsville, Pa.

Sheets, Galvanized.

American Sheet Steel Co., New York.
Bruce & Cook, 186 to 190 Water St., N. Y.
McClure & Co., Pittsburgh, Pa.
Osborn, J. M. & L. A., Cleveland, O.
Wood Alan Co., Philadelphia, Pa.

Sheets, Iron and Steel.

American Sheet Steel Co., New York.
Bruce & Cook, 186 to 190 Water St., N. Y.
Coe, Jas. A. & Co., Newark, N. J.
Follansbee Bros. Co., Pittsburgh, Pa.
Gummey, McFarland & Co., Phila., Pa.
Osborn, J. M. & L. A., Cleveland, O.
Wood Co., Alan, Philadelphia, Pa.

Shingles and Tiles, Metallic.

Chattanooga Steel Roofing Co., Chattanooga, Tenn.
Cincinnati Stamping Co., Cincinnati, O.
Cortright Metal Roofing Co., Philadelphia, Pa.
Meurer Bros. Co., Brooklyn, N. Y.
Montross Metal Shingle Co., Camden, N. J.

Shot.

Colwell Lead Co., 63 Centre St., N. Y.

Siding. (*See Roofing and Siding.*)

Skylights.

Canton Steel Roofing Co., Canton, O.
Drouve, G. Co., Bridgeport, Conn.
Mullins, W. H., Salem, O.
Rasner & Dinger, Pittsburgh, Pa.
Shipman, H., Brooklyn, N. Y.

Slaters' Tools.

Galt, Jno. & Sons, 253 Broadway, N. Y.
Salem Nail Co., 279 Pearl St., N. Y.

Snow Guards.

Clason Arch. Metal Works, Providence, R. I.

Solder.

Bruce & Cook, 186 to 190 Water St., N Y
Follansbee Bros. Co., Pittsburgh, Pa.
Gummey, McFarland & Co., Phila., Pa.
McClure & Co., Pittsburgh, Pa.
Meurer Bros. Co., Brooklyn, N. Y
Sanborn, J., 217 Water St., N. Y.
Taylor, N. & G. Co., Philadelphia, Pa.

Speaking Tubes and Whistles.

Ostrander, W. R. & Co., 204 Fulton St., N. Y.

Specialties, Sheet Metal.

Vogel, Wm. & Bros., Brooklyn, N. Y.

Statuary, Sheet Copper and Bronze.

Mullins, W. H., Salem, O.

Steam and Gas Fitters' Supplies.

Curtis & Curtis Co., Bridgeport, Conn
Walworth Mfg. Co., Boston, Mass.

Steam and Water Engineering and Regulating Specialties.

Kieley & Mueller, 7-11 West 13th St., N. Y

Steel Stamps and Stencil Dies.

Schwerdtle Stamp Co., Bridgeport, Ct.

Stove Bands.

Kirk Mfg. Co., Toledo, O

Stove Cement.

Dixon, Jos. Crucible Co., Jersey City, N. J.
Rutland Fire Clay Co., Rutland, Vt.

Stove Linings.

Bridgeport Crucible Co., Bridgeport, Conn.
McLeod & Henry Co., Troy, N. Y.
Marcy Stove Repair Co., 74 Beekman St., N. Y.
Presbrey Stove Lining Co., Taunton, Mass.
Rutland Fire Clay Co., Rutland, Vt.
Valentine, M. D. & Bro. Co., Woodbridge, N. J.
Williams Stove Lining Co., Taunton, Mass

Stove and Metal Polish.

Hoffman, Geo. W., Indianapolis, Ind
Nickel Plate Stove Polish Co., Chicago, Ill
Rutland Fire Clay Co., Rutland, Vt.

Stove Patterns.

Cope, G. W., Detroit, Mich.
Gobeille Pattern Co., Cleveland, O.
Milwaukee Pattern Works, Milwaukee, Wis.
Vedder Pattern Works, Troy, N. Y

Stove Pipe Thimbles.

O. K. Mfg. Co., Buffalo, N. Y.

Stove Repairs.

Clark, Henry N. Co., Boston, Mass.
Heath, C. C. & Co., Phila., Pa.
Howes, S. M. Co., Boston, Mass.
Marcy Stove Repair Co., 74 Beekman St., N. Y.
Metropolis Sheet Metals & Stove Repairing Co., Newark, N. J.
Troy Nickel Works, Troy, N. Y

Stove Trimmings, &c.

Shields, W. H. & Co., Troy, N. Y.
Troy Nickel Works, Troy, N. Y

Stove Trucks.

Arcade Mfg. Co., Freeport, Ill.
Howes, S. M. Co., Boston, Mass.

Stoves and Ranges.

Barstow Stove Co., Providence, R. I.
Beckwith, P. D., Est. of, Dowagiac, Mich.
Bergstrom Bros. & Co., Neenah, Wis.
Boynton Furnace Co., 207 Water Street, New York.
Brand Stove Co, Milwaukee, Wis.
Champion Steel Range Co., Cleveland, Ohio.
Cosby, C. H., Richmond, Va.
Dighton Furnace Co., Taunton, Mass.
Enterprise Stove Co., Vincennes, Ind.
Floyd, Wells & Co., Royersford, Pa.
Fuller & Warren Co., Troy, N. Y.
Hess-Snyder Company, Massillon, O.
Joliet Stove Works, Joliet, Ill.
Magee Furnace Co., Boston, Mass.
Michigan Stove Co., Chicago, Ill.
Pittsburgh Stove & Range Co., Pittsburgh, Pa.
Quincy Fdry. & Novelty Co., Quincy, Ill.
Richmond Stove Co., Norwich, Conn.
Sheppard, Isaac A. & Co., Phila., Pa.
Smith & Anthony Co., Boston, Mass.
Somerset Stove Foundry Co., Somerset, Mass.
Stamford Foundry Co., Stamford, Ct.
Thatcher Furnace Co., 240 Water St., N. Y.
Weir Stove Co., Taunton, Mass
Willard, Wm. G., St. Louis, Mo.

Stoves and Ranges, Gas.

Dighton Furnace Co., Taunton, Mass.
Metropolis Sheet Metals & Stove Repairing Co., Newark, N. J.

Stoves and Ranges, Oil, Vapor and Gasoline.

Heath, C. C. & Co., Philadelphia, Pa.

Street Lamps, Gasolene.

Merkel, H., St. Louis, Mo.

Tank Heaters.

American Radiator Co., Chicago, Ill.

Tanks, Steel and Wood.

Edwards, J. H., 59 Park Place, N. Y.

Terne Plates.

American Tin Plate Co., New York.
Taylor, N. & G. Co., Phila., Pa.

Tinners' Tools, Machines and Supplies.

Berger Bros. Co., Phila., Pa.
Bertsch & Co., Cambridge City, Ind.
Bliss, E. W. Co., Brooklyn, N. Y.
Bruce & Cook, 186 to 190 Water St., New York.
Follansbee Bros. Co., Pittsburgh, Pa.
Keene, Geo. C. & Co., Cincinnati, O.
Niagara Machine & Tool Wks., Buffalo, N. Y.
Ohl, Geo. A. & Co., Newark, N. J.
Peck, Stow & Wilcox Co., 27 Murray St., New York.
Stiles & Parker Press Co., Brooklyn N. Y.
Weiss, H. & Co., 20 Cliff St., N. Y

Tinners' Trimmings.

Vogel, Wm. & Bros. Brooklyn, N. Y

Tin Plate.

American Tin Plate Co., New York.
Bruce & Cook, 186 to 190 Water St., New York.
Coe, Jas. A. & Co., Newark, N. J.
Follansbee Bros. Co., Pittsburgh, Pa.
Gummey, McFarland & Co., Phila., Pa.
McClure & Co., Pittsburgh, Pa.
Meurer Bros. Co., Brooklyn, N. Y.
Osborn, J. M. & L. A., Cleveland, Ohio.
Taylor, N. & G. Co., Philadelphia, Pa.

Tin Scrap.

Vulcan Metal Refining Co., 157 Cedar St., N. Y.
Vulcan Western Co., Streator, Ill.

Tools and Machines, Steam and Gas Fitters'.

Armstrong Mfg. Co., Bridgeport, Conn
Curtis & Curtis Co., Bridgeport, Conn.
Saunders', D. Sons, Yonkers, N. Y.

Torches, Plumbers.

Clayton & Lambert Mfg. Co., Detroit, Mich.

Tubing.

Kirk Mfg. Co., Toledo, O.

Valves.

Am. Steam Gage & Valve Mfg. Co., Boston, Mass.
Crosby Steam Gage & Valve Co., Boston, Mass.
Jenkins Bros., 71 John St., New York.
Morgan & Co., Chicago.

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American Blower Co., Detroit, Mich.

Venilators and Chimneys.

Iwan Bros., Streator, Ill.

Ventilators and Chimney Caps.

Berger Bros. Co., Phila., Pa.
Fenn, Geo. E., Boston, Mass.
Globe Ventilator Co., Troy, N. Y.
Kramer Bros., Dayton, O.
Meurer Bros. Co., Brooklyn, N. Y.
Washburne, E. G. & Co., 46 Cortlandt St., New York.

Washers, Valves, &c.

Marston, I. G. & Co., Boston, Mass.

Washing Machines.

Wayne, Anthony Mfg. Co., Ft. Wayne, Ind.

Water Coolers.

National Enamelling & Stamping Co., 78 Beekman St., N. Y

Water Closets.

Colwell Lead Co., 63 Centre St., N. Y.

Water Fronts.

Clark, Henry N. Co., Boston, Mass.

Water Heaters.

Kemp, C. M. Mfg. Co., Baltimore, Md.

Wind Gates.

Miner & Peck Mfg. Co., New Haven, Ct.

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THE METAL WORKER.

With which is Incorporated The Stove and Tin Trade Journal, The Sheet Metal Builder, and Metal.

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Notices under this heading of reasonable length are inserted free of charge. Only those relating to employment are admitted. Write distinctly on one side of paper only, and do not use postal cards.

Original letters of reference should not be inclosed with replies to advertisements appearing in these columns as they are frequently mislaid and lost. A copy of the reference will serve the purpose.

HELP WANTED.

Experienced STOVE MOUNTER for an "open shop" near Chicago. Box 48, care *The Metal Worker,* 1205 Fisher Building, Chicago, Ill. Apr. 26

TINSMITH, at once; steady work to a first-class man; nine hours; state age, experience and wages wanted. Lock Box 1086, Southbridge, Mass. Apr. 26

At once, two good CORNICE MAKERS. Henry Weyand, Waterbury, Conn. Apr. 26

A sober and reliable TIN, SHEET IRON and FURNACE WORKER, with some knowledge of iron pipe and pump work; call in person or wire at once; this is a steady job. M. Carney Estate, Philmont, N. Y. Apr. 26

At once, an experienced TINNER who can do plumbing, pipe fitting, pumps, &c.; a good all around man for country shop; state wages. P. O. Box 133, Toms River, N. J. Apr. 26

Two PLUMBERS; must be A1 workmen, sober and able to do a good day's work; wages $3 per day. Grimshaw & Redfield, West Hampton Beach, N. Y. Apr. 26

A good all around TINNER; state salary expected and experience. Wolf & Sons, Box 115, Frostburg, Md. Apr. 26

Nonunion PLUMBERS: will pay high wages; nine hours; steady job for right men; only first-class men need apply. Box 553, Newport News, Va. Apr. 26

A first-class MELTER in a stove foundry and skylight work. "D. O.," care *The Metal Worker,* New York. Apr. 26

SOLICITOR and ESTIMATOR for cornice and skylight shop. "D. O.," care *The Metal Worker,* New York. Apr. 26

At once, a first-class TINSMITH; one who understands pumps, furnaces, plumbing and country work generally; state wages wanted and give references; steady job for the right man; must be energetic and strictly sober. "S.," care *The Metal Worker,* New York. Apr. 26

A TIN and SHEET IRON WORKER who can do furnace work and has some knowledge of plumbing; wages $2 per day to a suitable man. McRae & Son, St. Johnsville, N. Y. Apr. 26

A good, first-class TINNER and ROOFER; one accustomed to inside and outside work; must be sober and reliable; please state age and time employed in one place. C. S. McLean & Co., Utica, N. Y. Apr. 26

Three or four good TIN, GALVANIZED IRON and GENERAL SHEET METAL WORKERS; married men preferred; steady work; nine-hour day; good wages to sober, reliable, union men. Lock Box 55, Chattanooga, Tenn. Apr. 26

SALESMAN posted in the sheet iron and metal business. "D. S.," care *The Metal Worker,* New York. Apr. 26

TINNER; state ability, wages desired, &c. F. B. Karl, Delaware, Ohio. Apr. 26

A first-class PLUMBER to do repair work in country residences in Jersey. Reply, stating references, qualifications and wages, to "All Right," care *The Metal Worker,* New York. Apr. 26

Yearly contract to a strictly sober aud reliable TINSMITH; must be a good workman; $2.50 per day, ten hours. Bodine & Davis, Bellows Falls, Vt. Apr. 26

A man of good appearance and genial temperament, who understands hardware and has some knowledge of plumbing and heating, as OUTSIDE SALESMAN in small city. "A.," care *The Metal Worker,* New York. Apr. 26

Six first-class TINNERS and six first-class CORNICE MAKERS at once. Duluth Corrugating & Roofing Company, Duluth, Minn. Apr. 26

A TINNER; must be a first-class, all around workman; good wages and steady job to the right man. Carnarius & Dudley, Terre Haute, Ind. Apr. 26

A good PLUMBER who understands tinsmithing, both inside and outside; steady work in country town; state wages wanted, copy of reference, age, &c. Box 93, Gilbertsville, N. Y. Apr. 26

TINNER; one who can do inside and outside job work, such as roofing, guttering, &c., is sober and industrious, will be given steady work the year round; married man preferred; none need apply but one who understands his business and is willing to work; this is a good healthy town; free school, &c. P. O. Box 515, Shelbyville, Ky. Apr. 26

A first-class STOVE PATTERN MAKER; one that thoroughly understands his business; for such a man a good paying position will be given. "Patterns," care *The Metla Worker,* New York. Apr. 26

A first-class TINSMITH; one accustomed to shop work, jobbing, range and furnace work; steady work to reliable, steady man; state wages wanted, &c. F. S. Thompson, Kingston, N. Y. Apr. 26

An ESTIMATOR for cornice, skylight and all kinds of roofing; capable to take off work from plans, details and specifications; state ability, experience and salary expected. "A. C.," care *The Metal Worker,* New York. Apr. 26

A No. 1 WORKING FOREMAN; one who is capable of detailing, cutting and constructing galvanized iron cornice and skylight, blow pipe, tin and slate roofing; must be capable to take charge of shop from eight to twelve men; state age, nationality, what wages wanted and where last employed; must be a fast worker and strictly temperate. Berry Hardware Company, Clarksburg, W. Va. Apr. 19

A FORMER and POWER PRESS HAND; must have experience and can run a cornice press. Apply to "W. A. R.," care *The Metal Worker,* New York. Apr. 19

A first-class TINNER; must be a good tin roofer; good on furnace work and general jobbing; state experience; also a first-class PLUMBER; state experience; must be strictly sober and reliable. W. H. Stoyle, Huntington, L. I., N. Y. Apr. 19

A first-class TINNER with knowledge of iron pipe, pumps, wind mills and general job work in a country shop; must be sober and reliable; steady work to capable man at good wages; state age, experience, &c. B. F. Rockhill, Columbus, N. J. Apr. 19

First-class TIN and SHEET IRON WORKER; one who understands hot air heating, pump and iron pipe work; none but first-class man need apply; state wages, age and reference from last employer; must have tools. John F. Ryan, 635 Broadway, Kingston, N. Y. Apr. 19

STOVE SALESMEN of experience for Illinois, Iowa and Wisconsin; state former employer and amount of sales. "Salesman," care *The Metal Worker,* Park Building, Pittsburgh, Pa. Apr. 19

Wanted, a good TINNER not over 30 years old, understanding all branches of the work; steady work every day in the year to the right party; wages, $2 per day. J. H. Jones, 414 East Main street, Steator, Ill. Apr. 19

An experienced SALESMAN to sell stoves in Southern Indiana, Illinois, Kentucky and Tennessee. "Indiana," care *The Metal Worker,* New York. Apr. 19

Young man to take charge of shipping and act as FLOOR SALESMAN, by large manufacturer of heating apparatus; must be bright and energetic; opportunity for advancement if competent; state full particulars. "F. & R.," care *The Metal Worker,* New York. Apr. 19

A first-class PLUMBER who can do a good job of tin work; to a good man a steady job will be given the year round at good wages. Frank R. Jarrell, Lexington, Ky. Apr. 19

A TINSMITH; one who has some knowledge of plumbing; an all round man who is able to take care of the variety of work which comes to a country shop; a job by the year to the right man. Percy J. Barlow, Adams, N. Y. Apr. 19

One or two strictly first-class HOT AIR FURNACEMAN: wages, $3 per day; eight hours' work; steady work. Royal Heating Company, 210 Mason street, San Francisco. Apr. 19

One first-class TINNER. I. E. Bender, Summerhill, Pa. Apr. 19

TIN and SHEET METAL WORKER who can do plumbing and can play some part in brass band preferred; must be sober; good wages and steady work to right man. W. B. Cox, Williamson, W. Va. Apr. 19

Strictly sober TINSMITH; yearly contract; $2.50 per day; also PLUMBER who can occasionally do a small steam job; yearly contract. "Quick," care *The Metal Worker,* New York. Apr. 19

POWER CORNICE PRESS HAND; an experienced, intelligent, faithful man desired. David Lupton's Sons, Alleghany avenue and Tulip street, Philadelphia, Pa. Apr 12

Five first-class SHEET METAL WORKERS; steady employment guaranteed if satisfactory. Klauer Mfg. Company, Dubuque, Iowa. Apr. 12

SITUATIONS WANTED.

A thoroughly experienced steam and hot water man, capable of laying out, estimating and completing steam and hot water heating apparatus; would like to engage with established plumber or hot air furnaceman who desires to take up this branch; has had experience in large and small cities and familiar with New York trade; references exchanged. "Complete," care *The Metal Worker,* New York. Apr. 26

By young single man of three years' experience in country shop; good climber and not afraid of work; wages reasonable. Wm. Powell, Lewisburg, Ohio. Apr. 26

TINSMITH; 26 years of age, 11 years' experience on blow pipe furnace work, &c.; railroad or mill work preferred; strictly temperate and can come at once. Box 86, Berkick, Pa. Apr. 26

A first-class PLUMBER would like a steady job in city or country. Thomas McSpedon, 328 East Sixtieth street, New York. Apr. 26

First-class PLUMBER wants work, city or country; country preferred; best of references given. E. C. Smith, 232 East Sixty-fourth street, New York. Apr. 26

By an IRON and COPPER, also BRASS and COPPER WORKER; tinning and brazing a specialty. L. Smith, care Victor, 29 First avenue, New York. Apr. 26

As TINNER; 12 years' experience; well recommended; furnace, railway or assortment shop; can cut patterns. J. Halley, 423 East First street, Duluth, Minn. Apr. 26

A first-class, practical STEAM and HOT WATER FITTER: good all around jobber; 12 years' experience; can furnish first-class references if required. "H.," care *The Metal Worker,* New York. Apr. 26

By PLUMBER in city or country; steady. Thos. Buckley, care Jno. Connoly, 2533 Third avenue, New York. Apr. 26

As WORKING FOREMAN and CUTTER in cornice and skylight work; good mechanic, reliable and temperate; understand all kinds of roofing; handle help to good advantage and estimate on all kinds of work; position desired at once. "H. G.," care *The Metal Worker,* New York. Apr. 26

As SHIPPING CLERK and FLOOR SALESMAN with a range or furnace house, by a young man; experienced; can furnish references as to ability. "A. R.," care *The Metal Worker,* New York. Apr. 26

In good cornice and skylight shop, a position as BENCH HAND; can get out patterns if necessary; a thoroughly reliable man. "M. Z.," care *The Metal Worker,* New York. Apr. 26

To finish learning trade, by a young man (21), with two years' experience in tinning and furnace work, some piping, &c.; will go anywhere; please state wages. "D. C.," care *The Metal Worker,* New York. Apr. 26

By a PLUMBER and TINSMITH; a good all around man and understand all branches of the trade; position wanted by the year and will consider no other proposition; can furnish A1 references. Ernest H. Keir, Hardwich, Vt. Apr. 26

By a PLUMBER and GAS FITTER; good references; sober and reliable; wages moderate; steady work; city or country. J. J. Walsh, 1552 Fifth avenue, West Troy, N. Y. Apr. 26

By a steady, sober and reliable TINSMITH; ten years' experience at in and outside work; pump, wind mill and iron pipe work, also steam fitting and furnace work; will work for $11 per week for steady position year around; references. "G. T.," Whitesboro, N. Y. Apr. 19

As FOREMAN and CUTTER in cornice and roofing shop; position wanted by first-class mechanic who thoroughly understands the business in every detail; best of references. Box 46, care *The Metal Worker,* 1205 Fisher Building, Chicago, Ill. Apr. 19

SALESMAN with an established trade amog the hardware, stove and house furnishing trade through Virginia, North Carolina, South Carolina and Georgia is open for an engagement. "Salesman," 519 Freemason street, Norfolk, Va. Apr. 19

Am well equipped in foundry practice; can render excellent service in the running and general care of stove or heater business; have had splendid experience; 31 years old; good references. "P. G.," care *The Metal Worker,* New York. Apr. 19

By young man (27), strictly temperate, with some good hardware concern as CLERK: has had experience in the hardware line; best of references. "F. J. T.," care *The Metal Worker,* New York. Apr. 19

FOR SALE.

Patent Self Adjustable Stove Pipe Thimble.

Will adjust itself to all sizes of Stove Pipe and hold it secure. NO NAILING or FASTENING necessary. I have all the machinery and everything necessary to manufacture the Patent. Will sell cheap for cash.

Address "MRS. B.,"
Care *The Metal Worker*, Cincinnati, O.

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Old established Cornice and Roofing business, including machinery for manufacturing. Also carry a line of Hardware. Reason for selling, wish to retire from business. Splendid opportunity for a practical man. Address

M BIERMAN,
3244 Jefferson Ave., Cincinnati, Ohio.

WE TEACH YOU

how to cut patterns for anything in the Sheet Metal line. Complete course sixteen dollars and fifty cents ($16.50), to be paid in monthly payments. The course consists of thirty-three lessons and one hundred plates (13 x 18 in.) which makes a complete treatise on sheet metal work. Send for full information and sample plate. For ten cents we will send you plates and instructions showing how to cut a square miter.

HOME INDUSTRIAL SCHOOL, Canton, O

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1 20 in. Square Shears. 1 20 in Peck-Stow Folder. 1 Groover. 1 30 in. Rollers. 1 Double Locking Machine. 1 Swedging Machine. 1 Large Turning Machine. 1 Small Turning Machine. 1 Large Burring Machine. 1 Small Burring Machine. 1 Beak Horn Stake. 1 Blower Horn Stake. 1 Needle Stake. 1 Candle Stake. 1 Hollow Mandrel. 1 Setting Down Machine. 1 Large Bench Shears. 1 Creasing Stake. 1 Square Head. made by Peck Stow & Wilcox Co., used some, but guaranteed to do as good work as when new.

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A good chance for Plumber and Tinsmith with small capital to buy a good, clean stock of Hardware, Stoves and Ranges, with good paying tinshop. Good chance to add plumbing; have water works and sewers; plenty of plumbing and tinning; sewers are almost completed. and some plumber, dealer and tinner will get a good thing. Can give best of reasons for selling.

Address "SELLER,"
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Light Grey Iron and Stove Castings.

We are in a position to contract for delivery of castings, commencing not later than July 1. We would be pleased to communicate with parties having their own patterns, who desire to contract for castings for delivery commencing at that date. Address

SIMPSON STOVE and MANUFACTURING CO.,
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Works, Canonsburg. Pa.

FOR SALE.

A complete stock of Stoves and Tinware, including store, building and residence in Western Missouri. Excellent farming community. Correspondence solicited. Address

"STOVES AND TINWARE,"
Care *The Metol Worker*, 1205 Chemical Building,
St. Louis, Mo.

FOR SALE.

My Hardware and Tin Shop. doing a good business, in best town in Northwestern Ohio. Population about 30.000. Stock, tools, etc. will invoice about $1.500. Good reasons for selling. Address

W. A. NUNGESTER,
Lima, Ohio.

For Sale.

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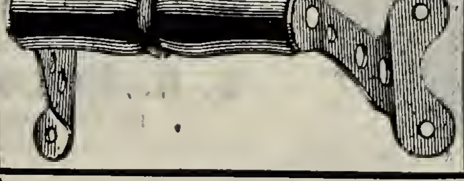
THE HIGHEST IN QUALITY.		WRITE FOR PRICE.
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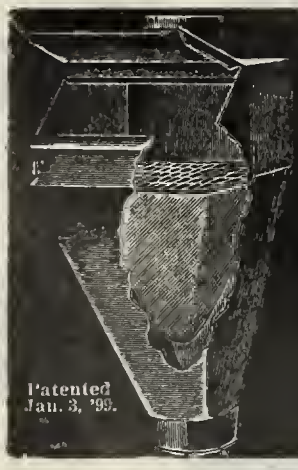
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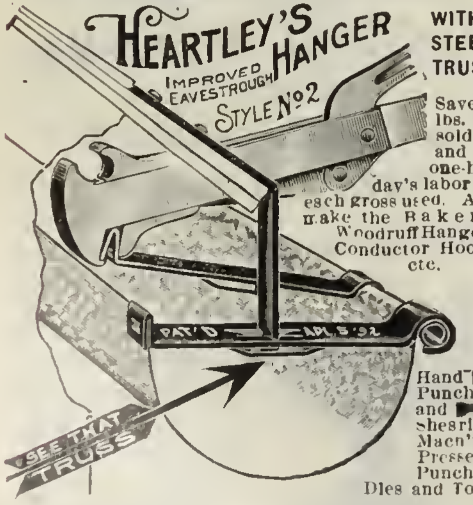

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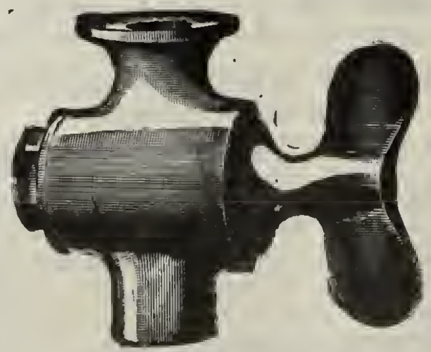

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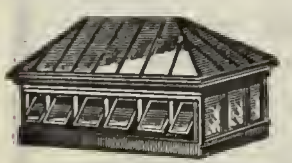

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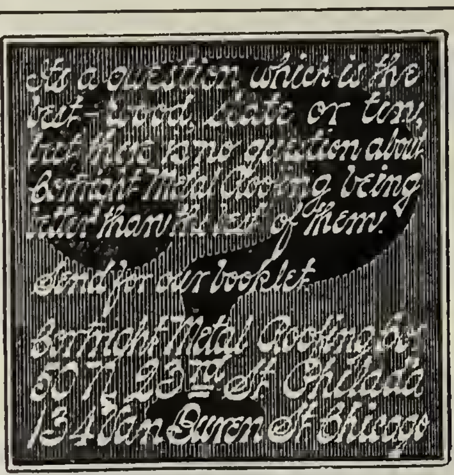

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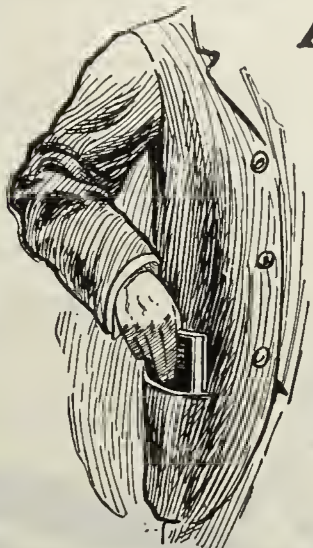

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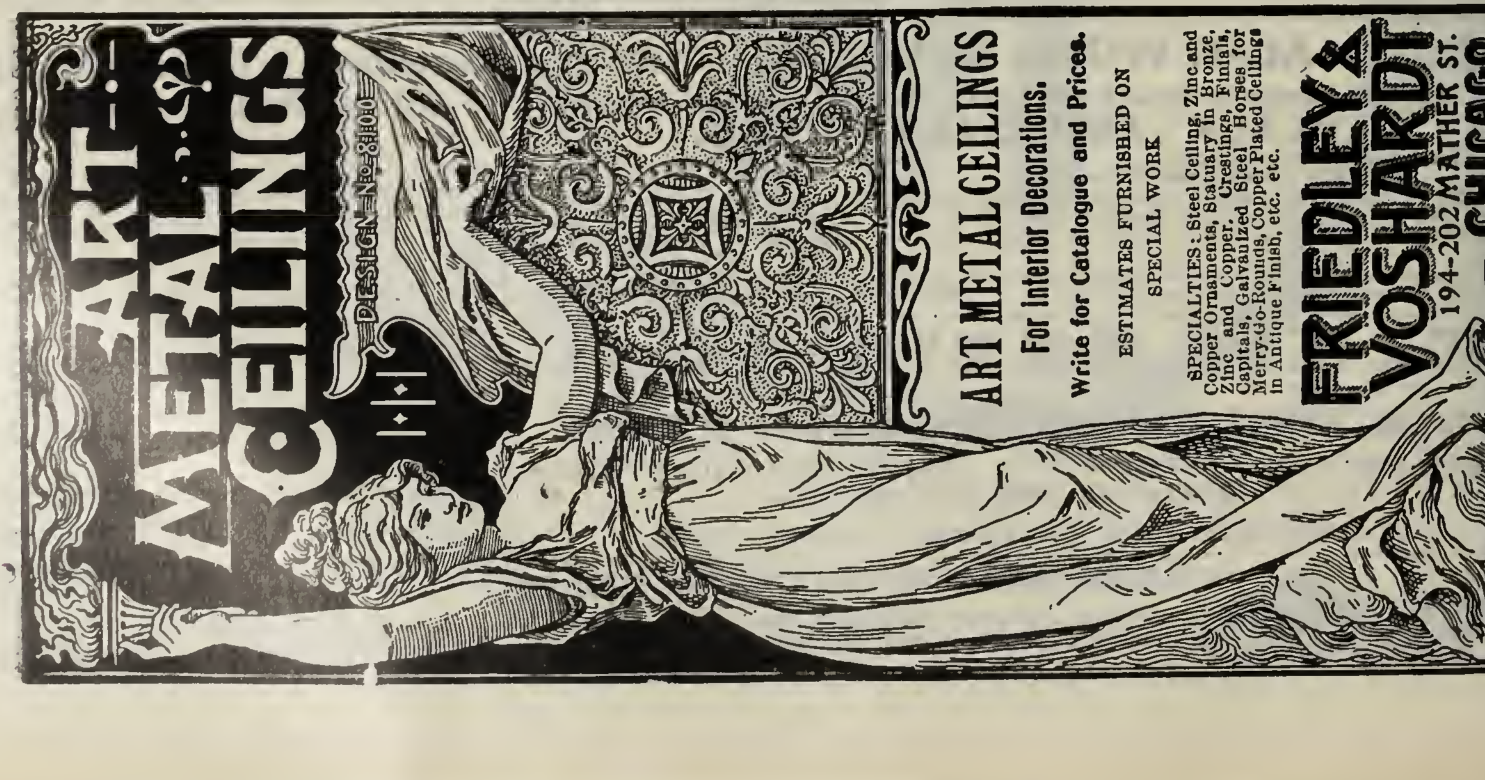

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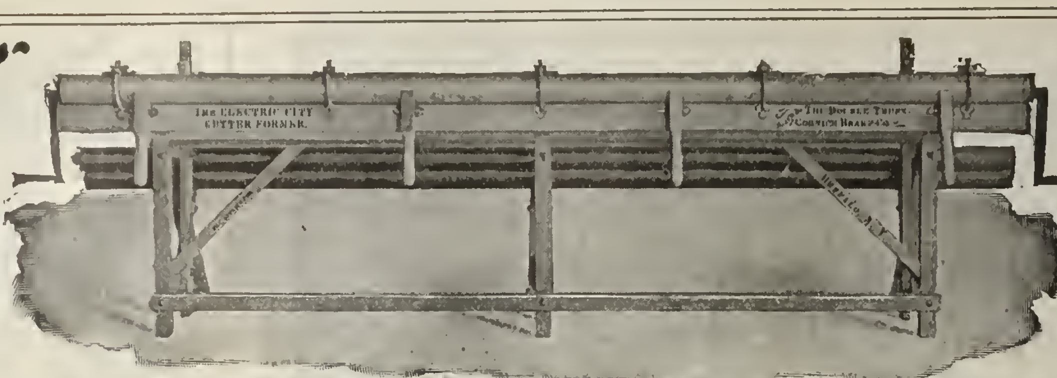
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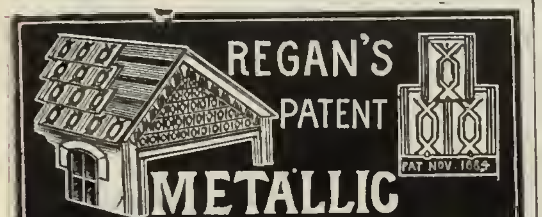

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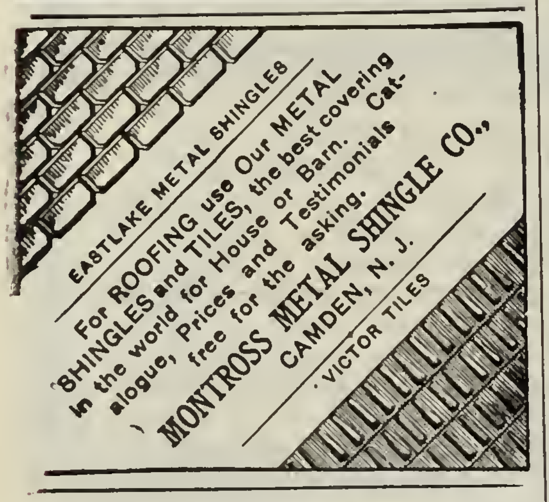

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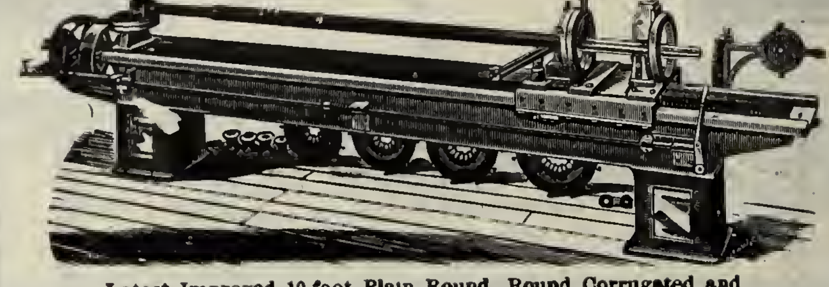

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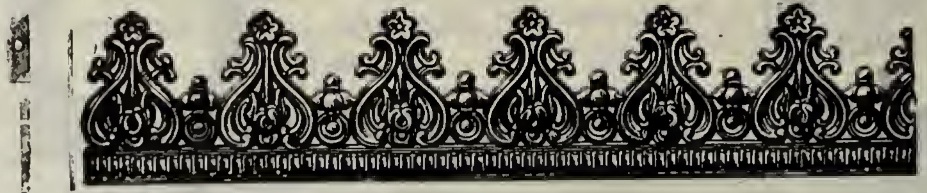

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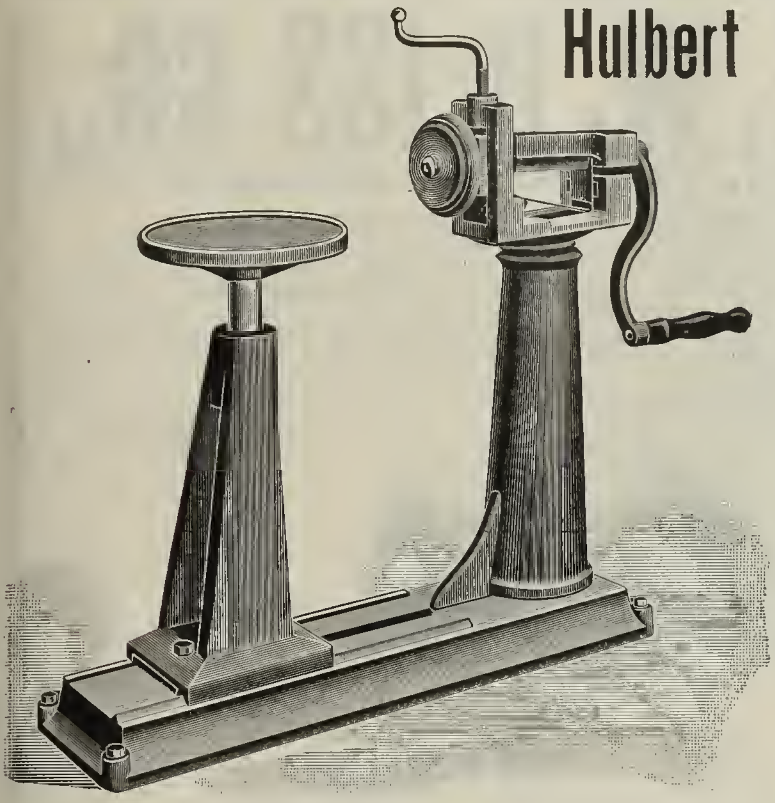

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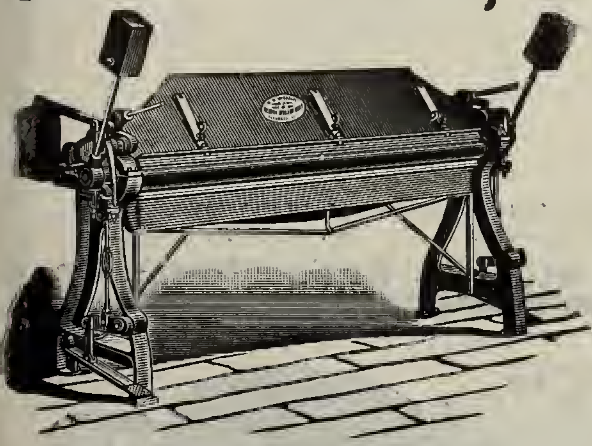

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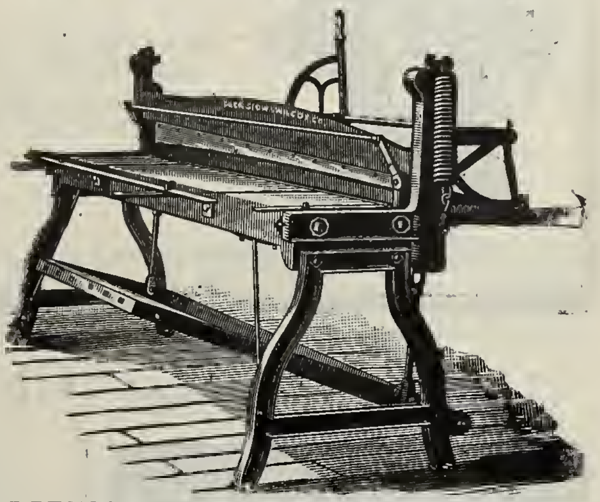

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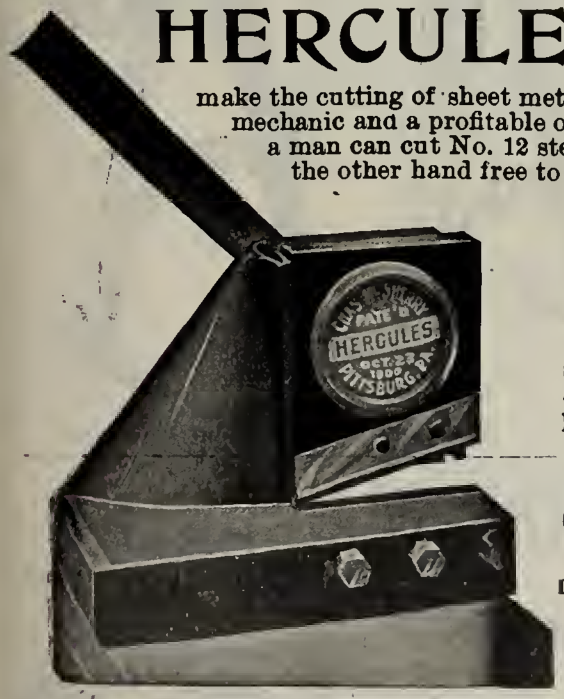

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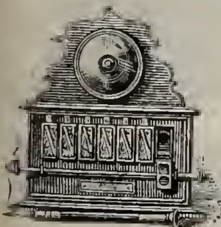

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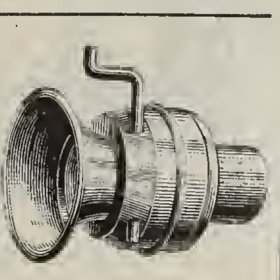

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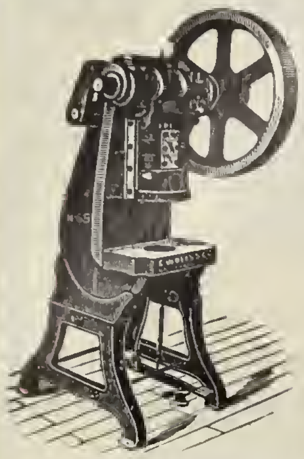

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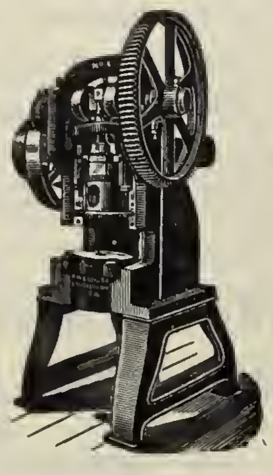

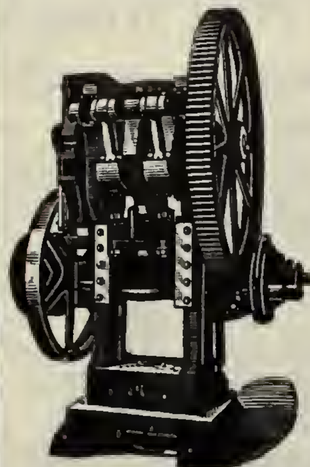

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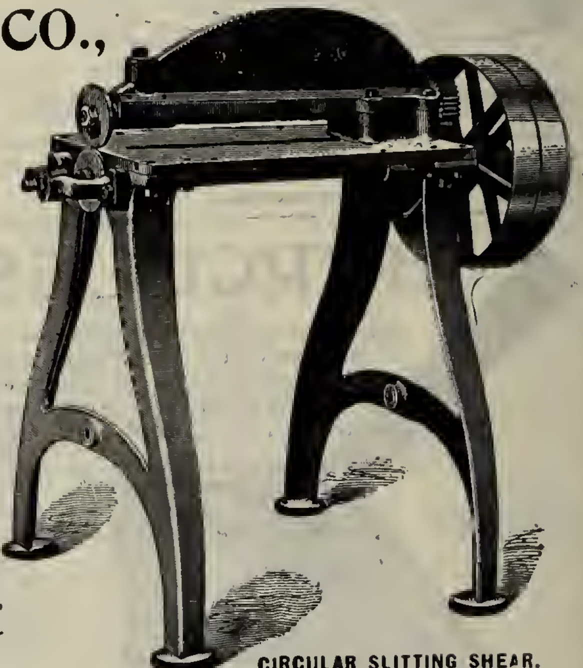

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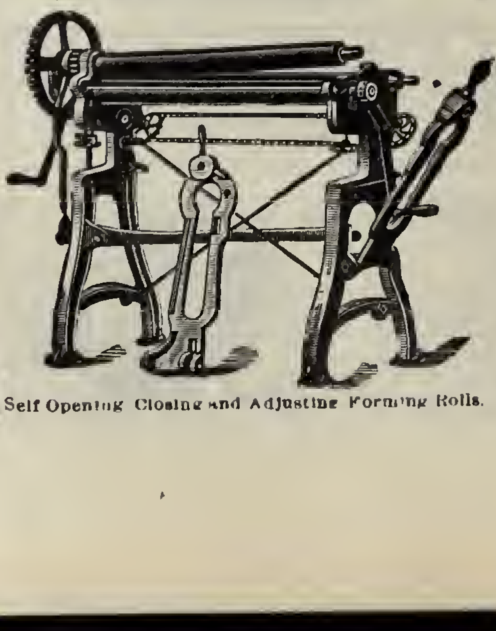

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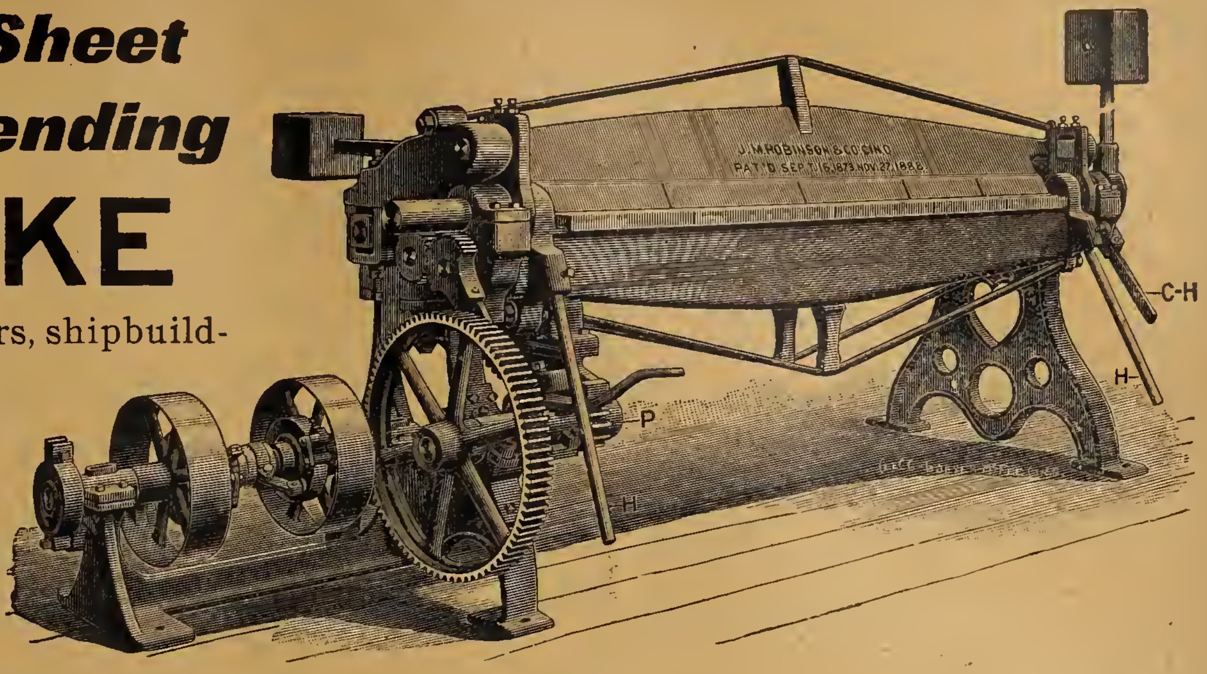
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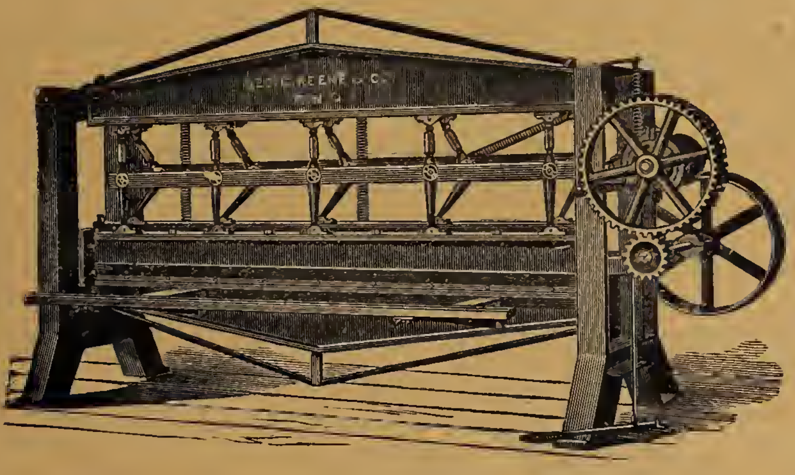
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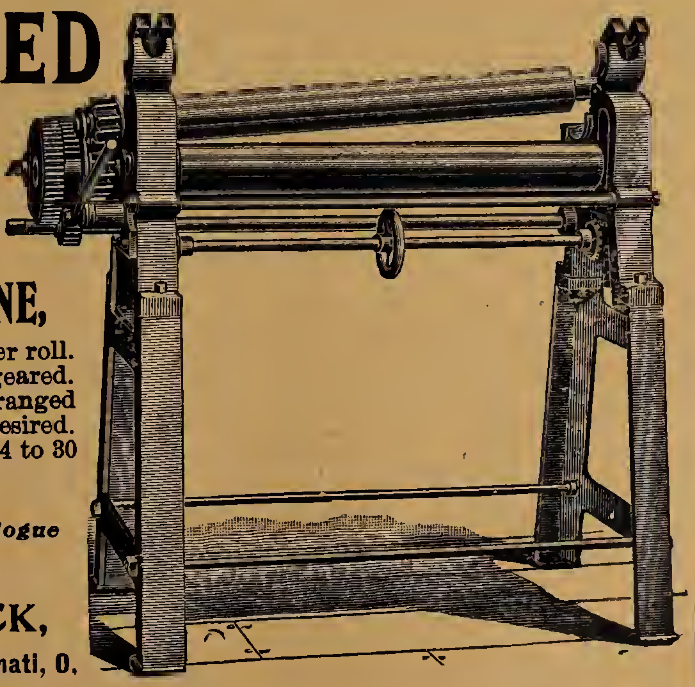

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FULLER & WARREN CO., Troy, N. Y.
This Ad. changes every week.

NOTICE.
Silver, Nickel Platers and Brass Goods Mfrs. MATERIAL FOR DRYING PURPOSES.
Write for prices to John Sommer's Son, 355-365 Central Ave., Newark, N. J.

CROSBY SPRING-SEAT
GLOBE and ANGLE VALVES, IRON and BRASS.
All working parts renewable without taking the valve from piping. All parts interchangeable. Guaranteed not to leak at high pressure. Send for circular.
Crosby Steam Gage & Valve Co.,
BOSTON: 95 Oliver St. NEW YORK: 78 John St. CHICAGO: 21 23 W. Lake St.

JENKINS BROTHERS' VALVES
Perfectly tight under all pressures of steam, oils or acids.
Warranted to give satisfaction under the worst conditions.
Received the Highest Award GOLD MEDAL At the Pan-American Exposition.
Insist on having the genuine stamped with Trade-Mark.
JENKINS BROTHERS, New York, Boston, Philadelphia, Chicago.

FOLLANSBEE BROTHERS CO.,
328-330-332 Second Ave.,
Pittsburgh.
Galvanized and Black Sheets.
Sheet Copper, Conductor, Eave Trough.

Our sales of
Follansbee Pure Iron Old Style
increasing wonderfully; it
is Iron Base, not steel.
Makers Scott's Extra Coated
and other Tin Plates.

Philadelphia, 133 Arch Street.
Chicago, 504 North Water Street.
Louisville, 7th and Magnolia.

READ OUR "AD"
Page 13.
MAGEE FURNACE CO.,
Boston.

ROUND OAK
STANDARD OF
AMERICA

**More than
Sixteen
Million
People**

know that the

**Genuine
Round Oak**

*heating stove
is the most
powerful, durable
and economical
heating stove
for hard or
soft coal,
coke or wood
made in
this country.*

Do you?

ROUND OAK
ESTATE OF P.D. BECKWITH DOWAGIAC MICH
DE-WAH-JACK

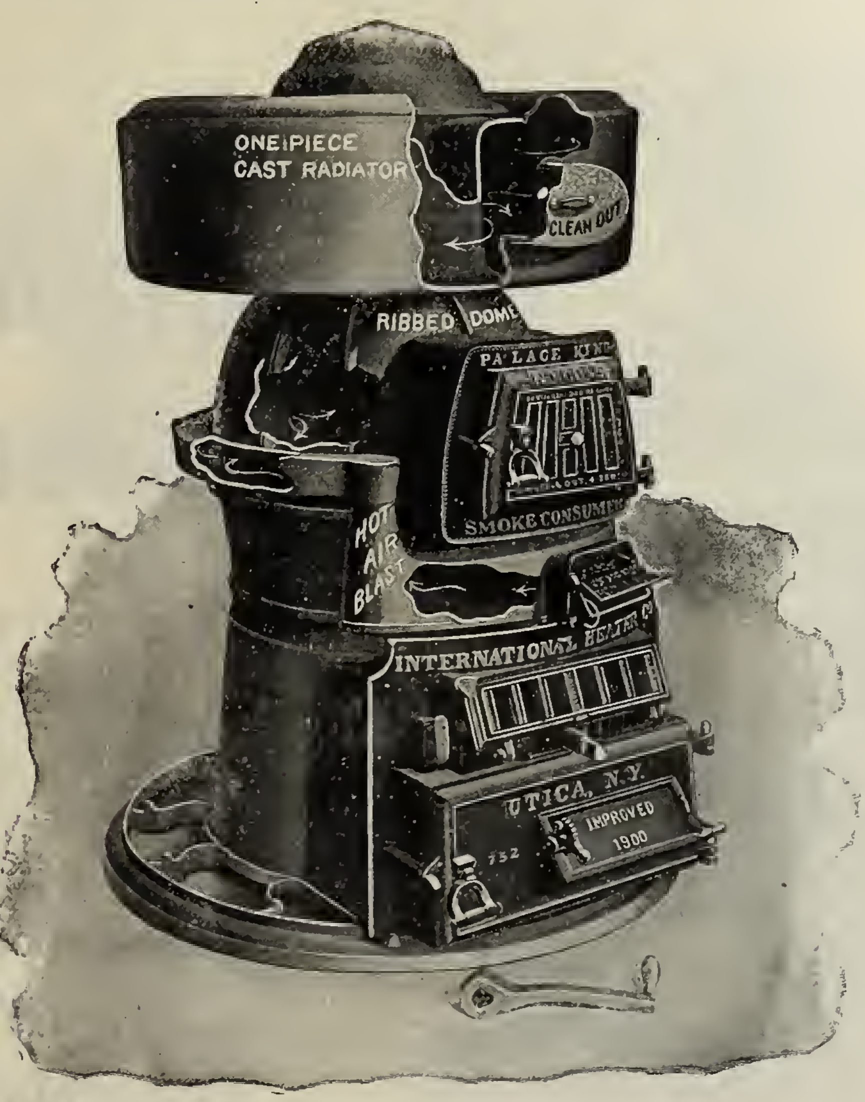
Estate of P. D. Beckwith
Dowagiac, Michigan
MAKERS OF GOOD GOODS ONLY

NEW PALACE KING

Hot Blast Smoke Consumer

WARM AIR FURNACE

For Soft Coal.



A Heavy, Substantial, all Cast Iron and Strictly High Grade Heater; Especially Constructed for Soft Coal Fuel.

THE HOT AIR BLAST APPLIANCE

Is so formed that the distribution of the hot air to the combustion chamber is equally divided at three points; at the back and on each side. This appliance embodies the important advantage of a hot air blast and also the very vital point of a durable construction. This question of durability of a hot blast appliance for soft coal fuel is one that has caused much annoyance and expense, and in this construction we have carefully provided for this important point. It is not a part of the combustion dome or fire-pot, insuring equal expansion and contraction. The air is discharged into the combustion chamber directly over the surface of the fire, and at a very high temperature, yet the construction is such that the combustion does not come in direct contact with it; the parts are allowed to expand and contract equally.

CATALOGUE OF OUR ACETYLENE GAS MACHINE WILL INTEREST YOU.

International Heater Co.,

LARGEST MAKERS OF HEATING AND LIGHTING APPARATUS IN THE WORLD.

UTICA, N. Y.

NEW YORK. BOSTON. CHICAGO. DENVER.

PARIS—GOLD MEDAL—1900.

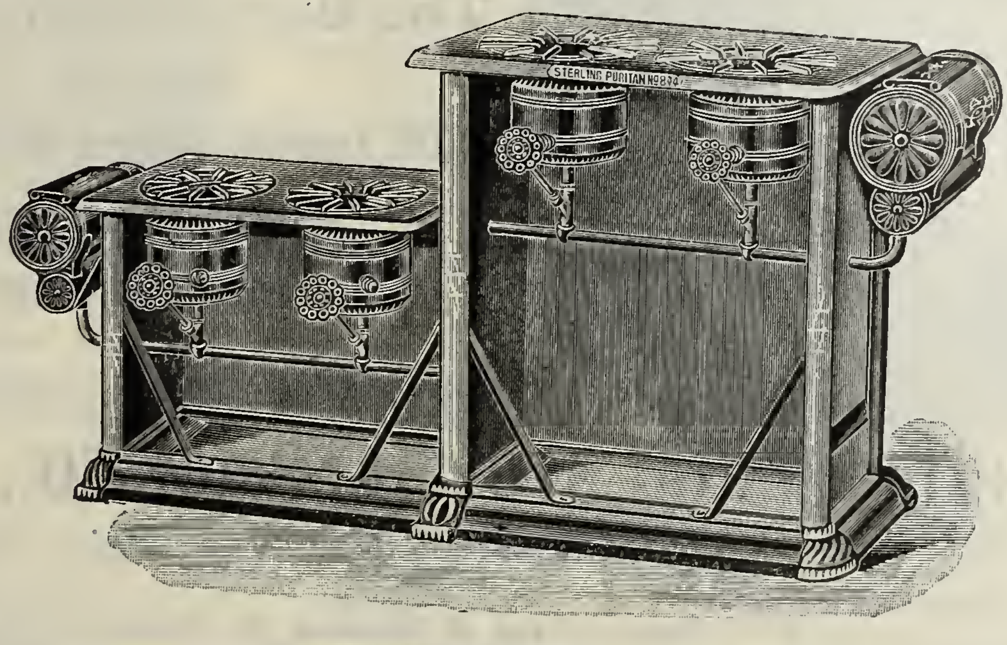
Moore's AIR-TIGHT Oak

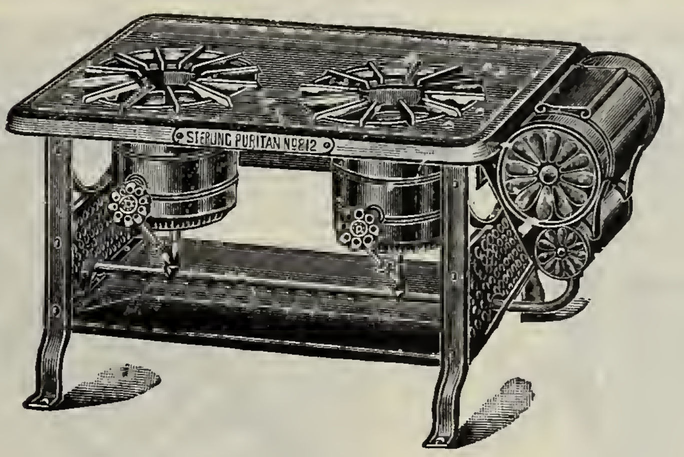
A Clean Sweep

IT'S easy to sweep around the Cabinet Base—no dirt catching under the legs—no inaccessible spot way in the center. It's all within reach. No need to enlarge upon its superior cleanliness. Anybody can see that at a glance. Especially your customer, who probably knows all about *Brooms.*

JOLIET STOVE WORKS, Joliet, Illinois.

Sterling-Puritan Wickless-Blue Flame Oil Cook Stove.





GET THE ORIGINAL

FROM THE

ORIGINAL MAKERS.

NO IMITATION IS AS GOOD.

70,000 made and sold in 1901.

SEND FOR CATALOGUE.

THE CLEVELAND FOUNDRY CO.,

CLEVELAND, OHIO., U. S. A.

BRANCHES:

CHICAGO, 69 Lake St. **SAN FRANCISCO, 132 Market St.** **PHILADELPHIA, 46 N. 2nd St.**

MARION CINDERELLA
CLEANOUT
THE PITTSBURGH STOVE & RANGE CO.

Cinderella

Steel Ranges

REPRESENT

The Best Materials,
The Best Construction,
The Best Workmanship.

THEY ARE

The American Standard for Excellence.

ALL STYLES AND SIZES AT
MODERATE PRICES.

We would be pleased to send our catalogue.

STOVES AND RANGES CINDERELLA NEVER FAIL

PITTSBURGH STOVE & RANGE CO.,
PITTSBURGH, PA.

STOVES AND RANGES CINDERELLA NEVER FAIL

WESTERN SALES AGENT,
W. D. Sager, 38 and 40 Michigan St., Chicago, Ill.

WITH Improved removable Duplex Grate, Improved Water Back for heating water, Flue Lined with Pure Asbestos Board, New Non-Warping Oven Bottoms, Cold-Handled Gravity Latch, Drop Oven and Feed Door, Patent Double Centers, Regulating Damper, Nickel-Plated Towel Rod.

Nickel Bands on doors are ventilated to prevent tarnishing, and body of Ranges is highly finished.

GEM-MILLER RANGES

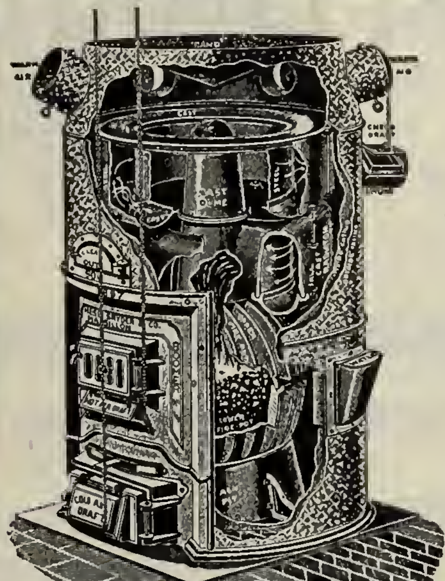
All bright parts Nickeled instead of Polished.

The
Wm. Miller
Range & Furnace Co.

125 and 127 E. Fifth St.
CINCINNATI, O.

Border Copyright, '98.

REGARDING
Boomer Furnaces.
OR
Boomer Steel Ranges



We want to state in strongest terms possible that if you want the
HEAVIEST,
MOST DURABLE,
MOST ECONOMICAL
and easiest to take care of Furnace or Steel Range, buy a BOOMER.

Boomer Furnace.

Neither time nor money is spared to make them the Best.
Buy Boomers and save your coal bills.
We invite investigation.

THE HESS-SNYDER CO.,
Manufacturers, MASSILLON, O.

Boomer Steel Range.

CITY
BUCKEYE
RANGE.

For Hard, Soft Coal,
Wood or Coke.

MADE IN 17 AND 19 INCH OVEN.

Square Top and Bracket Reservoir
Fitted with Water Heater.

AN ATTRACTIVE PIECE
OF GOODS AND . . .

A Ready Seller.

Write for Descriptive Catalogue and Prices.

OHIO STOVE CO.
Portsmouth. Ohio.

The Trade Mark Brother.

USED BY MILLIONS
ACORN
STOVES
AND
RANGES

ONCE upon a time there was a poor man who had three sons, all of whom became Stove Merchants; the first Diligently sought the Cheapest, but never found it and died poor; the second, desiring to please Everybody, sought Variety and bought Good Things from many foundries; his sales Dwindled and for many years he has voted the ticket: "Stove-Business-No-Good;" the third son sought a good Trade Mark Line and found it; he has stuck to it and advertised it for many years until he believes this Stove Trade Mark to be an important part of HIS capital in business; daily he is offered "better stoves" at "lower prices" and on "longer terms," but Strange to Tell he buys them not; he has a Wad of money, is President of the best bank in his town and could buy "U. S. Steel" or even spend a few days at a St. Louis Hotel.

Which think Ye the best Model? The Brother who believed in the Trade Mark or the two who sought to please Everybody?

RATHBONE, SARD & COMPANY,
ALBANY. AURORA. DETROIT. CHICAGO. SAN FRANCISCO.

STAR STOVES AND RANGES GUARANTEED. ENTERPRISE STOVE CO. VINCENNES, IND.

OUR CATALOGUE,

SHOWING

GAS RANGES
CAST RANGES
STEEL RANGES
STEEL COOKS
HOT PLATES
CAST and STEEL HEATERS

WILL BE FURNISHED FOR THE ASKING BY

Enterprise Stove Co., VINCENNES, IND.

REFRIGERATORS,
BLUE FLAME OIL STOVES,
GASOLINE STOVES.

LARGEST JOBBERS
in
NEW ENGLAND.

GAS RANGES,
FURNACES, STOVES,
RANGES AND REPAIRS.

HENRY N. CLARK CO., 56 and 58 UNION ST., **Boston, Mass.**

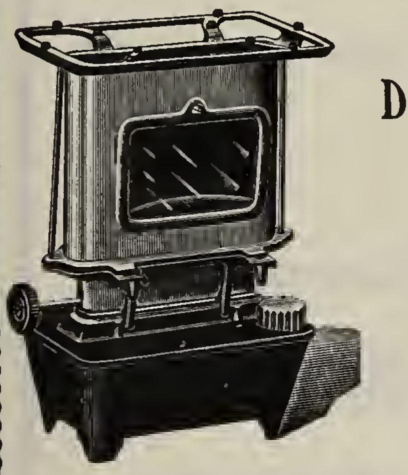
BRAND STOVE CO.

STOVES, RANGES and FURNACES.
SEND FOR CATALOG.
MILWAUKEE, WIS.

THE TAYLOR & BOGGIS FOUNDRY CO.,

MANUFACTURERS OF

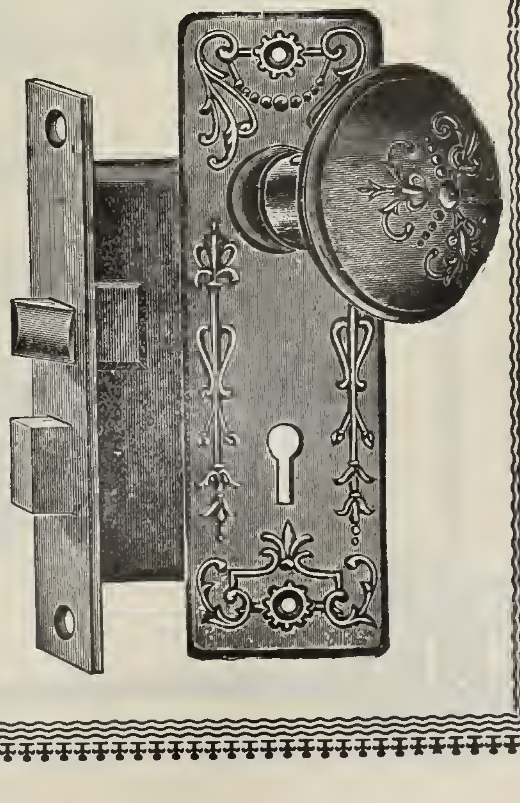
LIGHT GRAY IRON CASTINGS.

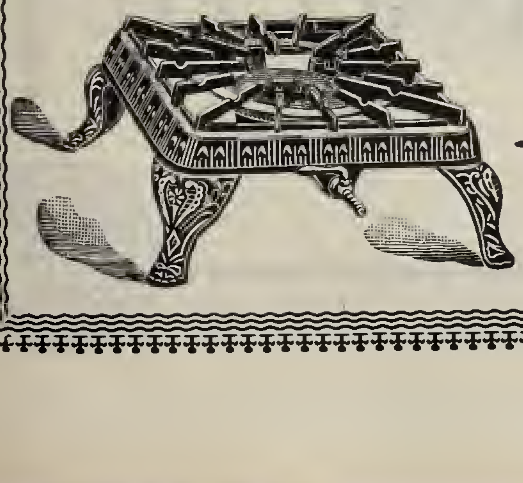


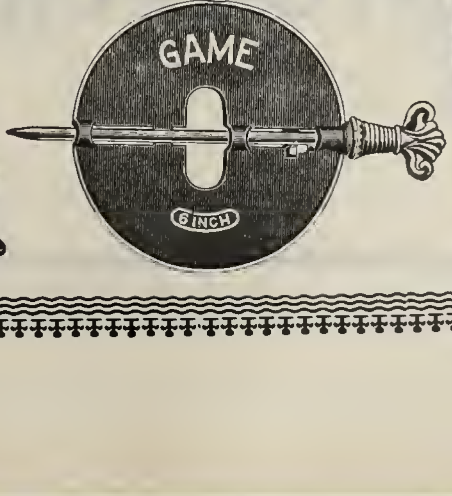
Builders' Hardware,
Dampers, Oil and Gas Stoves.
Furnace Lamps,
Molasses Gates,
Letter Boxes,
Hardware Specialties.

CLEVELAND, O.

"Hudson" Design.







Don't Worry

Or sit up nights trying to solve your Heating problems. We've run against many kinks and snarls in our 53 years' experience in the designing and installation of

Heating Apparatus

And know what to avoid

We are in a position to give competent advice and assistance in the preparation of plans for heating and ventilating apparatus.

In consulting with us you assume no obligation.

Write us what you desire to accomplish

THE BOYNTON FURNACE CO.

New York **Chicago**

THE H. B. SMITH CO.,

WESTFIELD, MASS., U. S. A.

Catalogue furnished only upon application to

Heating Contractors, Engineers and Architects

92 Pages. Size 9 x 12 Inches.

COTTAGE BOILERS.

STEAM BOILERS (8 SIZES), 550 SQ. FT. RADIATION SUPPLIED.
WATER BOILERS (8 SIZES), 900 SQ. FT. RADIATION SUPPLIED.

PACIFIC COAST AGENTS

HOLBROOK, MERRILL & STETSON,

SAN FRANCISCO, CAL.

EUROPEAN AGENTS

AUG. EGGERS,

BREMEN AND NEW YORK CITY.

SALESROOMS :

THE H. B. SMITH CO.,

133 CENTRE STREET,
NEW YORK.

510 ARCH STREET,
PHILADELPHIA.

"He who knows and knows not that he knows
is asleep—wake him.
He who knows not and knows that he knows not
is simple—teach him.
He who knows not and knows not that he knows not
is a fool—shun him.
He who knows and knows that he knows
is wise—follow him.

He who knows the

RICHMOND

Heaters that Heat

BOILER

as we know it, will not fail to
use it and be wise in so doing.

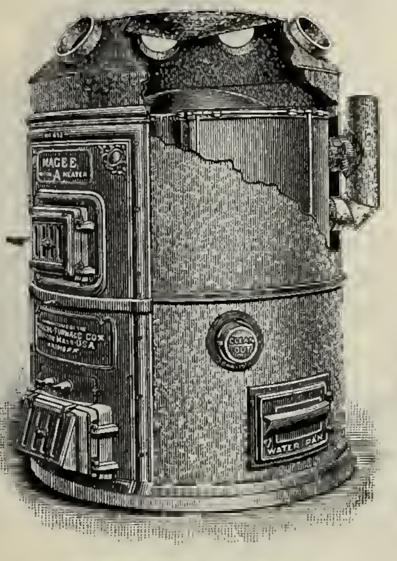
A little investigation and a few comparisons will prove to
you that it is only common sense to choose a Richmond.

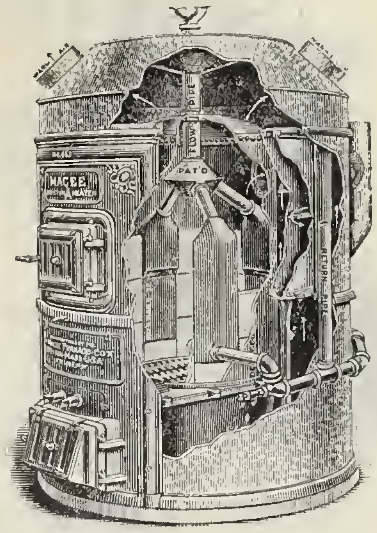
Let us tell you more about them.

The Richmond Stove Company

NORWICH, CONN., U. S. A.

New York Office, 737-738 Park Row Building. **Philadelphia, 18-24 South 7th Street.**
Pittsburg, 210 Ferguson Building.
Chicago Heater & Supply Co., 54 Dearborn St. Chicago. **Rumsey & Sikemeier, St. Louis.**



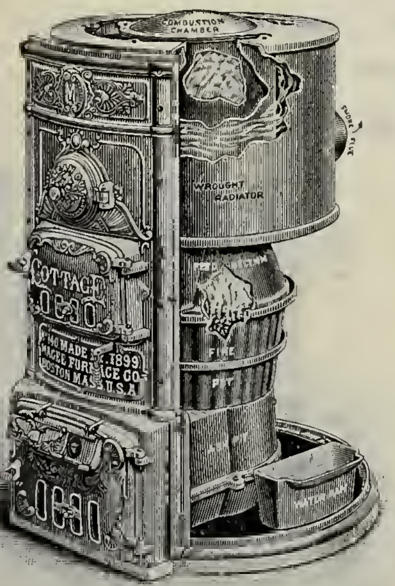


Easily Sold, Stay Sold, and Sell Others.

WARM AIR ALONE OR IN COMBINATION.

Magee FURNACES

ALL CAST, OR WROUGHT IRON.



MAGEE FURNACE COMPANY,
MAKERS
Cooking and Heating Apparatus for All Uses
Since 1856.
32-38 Union Street, BOSTON.
86 Lake Street, CHICAGO.

OUR BUSINESS HAS GROWN BECAUSE THE BUSINESSES OF OUR CUSTOMERS HAVE GROWN.

UP-TO-DATE FURNACES
FOR
UP-TO-DATE DEALERS
OUR KEYNOTE.

SEND FOR FURNACE CATALOGUE.

A Word to the Wise is Sufficient!

HERO.

The **Wise Dealer** should keep in mind **these words,** viz:

FAULTLESS Furnaces,
HERO Furnaces,
COMFORT Furnaces,
RIVAL Furnaces

They speak for themselves, and have been **talking** for years in many places. If **YOU** have not heard from them, now is the time to give them a chance

The GRAFF FURNACE CO.

MANUFACTURERS,
208 WATER ST., NEW YORK.

Royal Heaters.

HART & CROUSE CO.,

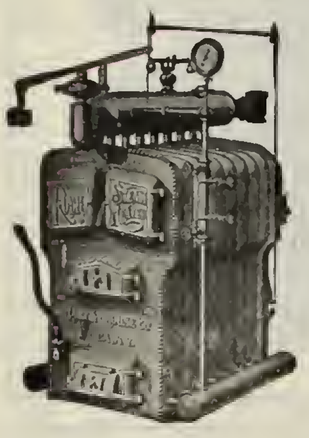
235 Water St.,
New York.

78 Lafayette St.,
UTICA, N. Y.

79 Lake St.,
Chicago.

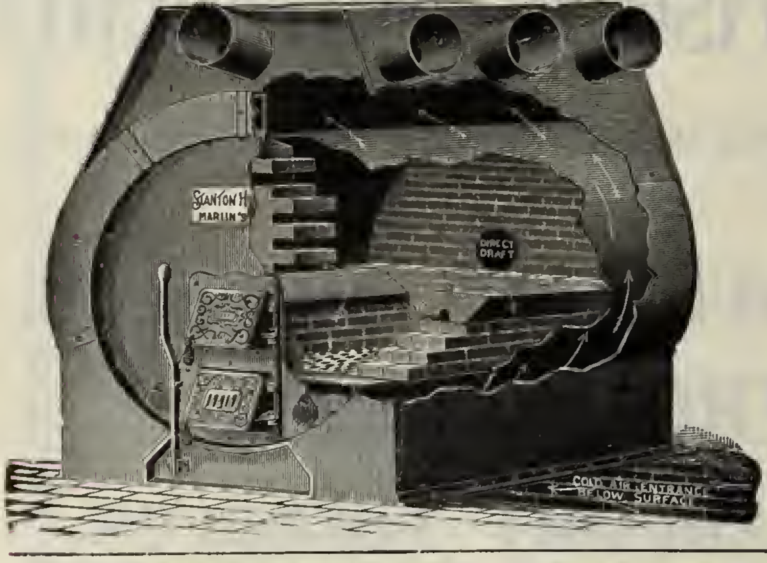
The Leading Line of Heating Apparatus.

HOT WATER.
STEAM,
HOT AIR.



The Stanton Seamless Heater,

PORTABLE CASED.



STANTON H
MARTIN'S
DIRECT DRAFT
COAL AIR ENTRANCE BELOW SURFACE

LOUISVILLE, KY., April 5, 1901.

THE STANTON HEATER CO.,
Martin's Ferry, Ohio.

Gentlemen:—Your favor of the 3d inst. is received asking our experience with the Stanton Heater which you put in for us during the Fall of 1899. In reply we will say that it gives us pleasure to express our entire satisfaction with this Furnace. While we have had no severe weather this winter there have been several quite cold snaps, but our offices have been very comfortably heated, and our coal bill (Pittsburgh coal) has been quite moderate compared with other Heaters we have used.

The satisfaction the Heater has given us can be best expressed by saying that we have not heard the Furnace mentioned once this winter. You can see, therefore, that we have had absolutely no cause for complaint.

Yours very truly,
ROBINSON-HUGHES & CO.

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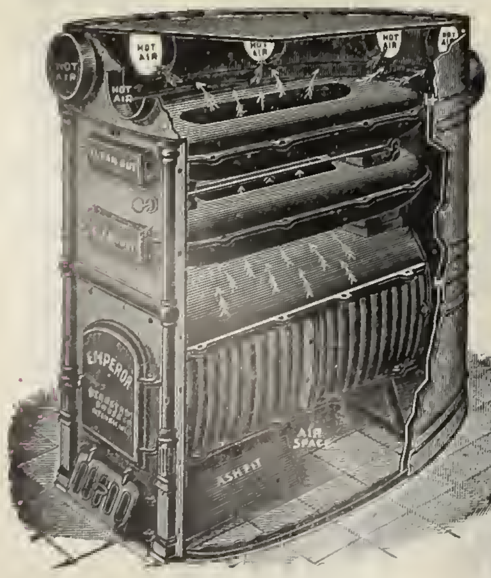
THE STANTON HEATER CO.,

Martin's Ferry, Ohio.

See our advertisement next week.



Emperor Furnaces

FOR WOOD.

Simple, Safe, Durable. Economical in Fuel.

The Best and Cheapest Line of Wood Furnaces. . . .
Furnished for either Brick or Galvanized Iron Casing

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Bergstrom Bros Co.

NEENAH, WIS.

YOU NEED THEM.

Some one has said "We need all and all need us." We're sure you need

"GURNEY" HEATERS, Bright Idea, Doric and 400 Series,

if you would make the most of your business, because the "Gurney" possesses those attributes which appeal strongest to heater buyers; the ability to cut down the coal bill, to furnish the largest amount of heat possible from the fuel consumed as well as the ability to wear several years longer than other heaters.

You may not be able to get business with some heaters, but the dealers who handle the "Gurney" never have any trouble. Weigh this fact carefully, then write for particulars relative to an agency.

Gurney Heater Mfg. Co.,

74 FRANKLIN ST., BOSTON. 111 FIFTH AVE., NEW YORK CITY.

Western Selling Agents, James B. Clow & Sons, 358 Franklin St., Chicago, Ill.

Bengal Furnace

IT IS All Cast Iron
Low in Price
Adapted to All Cellars
IT WILL Reduce coal bills
Please your customers
Do all we claim
IT WON'T Rust out
Disappoint
Heat the chimney

Are You a BENGAL Agent?

EASTERN SELLING AGENTS:
GURNEY & CO.,
Washington, Hanover and Elm Streets, Boston, Mass.

FLOYD, WELLS & CO., Royersford, Pa.
NEW YORK OFFICE, 210 WATER ST., R. W. HILLMAN, Manager.

The Robinson Tubular Warm Air Furnaces

give universal satisfaction where-ever used

They are up-to-date in every respect and have many special features not found in other furnaces.

WRITE FOR CATALOG.

ROBINSON FURNACE CO., Chicago.

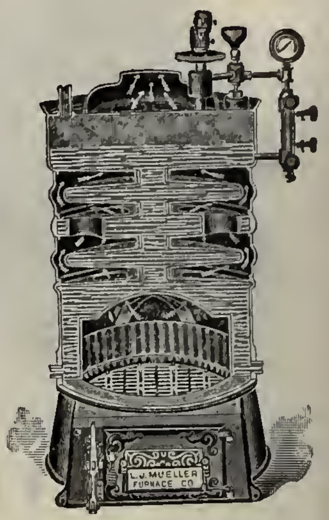
STOVE REPAIRS

Bought from us entitle the purchaser to a 1000 mile book *Free*, on any railroad.
Have you received one of them?

CHAS. C. HEATH & CO., Philadelphia and Baltimore. Write us for particulars.

NONE CAN COMPARE
WITH THE
MUELLER
Furnaces and Boilers.

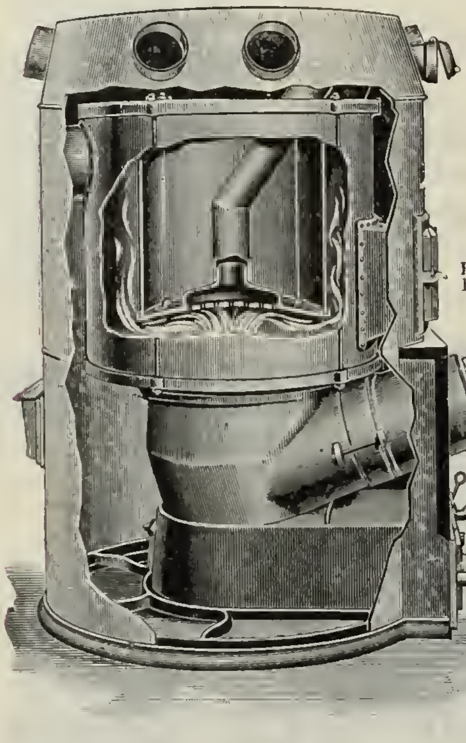
All Cast Iron Double Radiator.


L. J. MUELLER FURNACE CO.

Sold On Their Merits.
Heaters in all styles. For all kinds of fuel.
WRITE FOR CATALOGUE AND PRICES.

Established 1857. Everything in the Heating Line.

L. J. MUELLER FURNACE CO.,
190 Reed St, Milwaukee, Wis.


Hot Blast Air Inlet.
Hard Coal Feed.
Soft Coal Coking and Smoke-Burning Magazine

THE PATRIC FURNACE
IS A COMBINATION OF
GOOD THINGS
For the Dealer and User

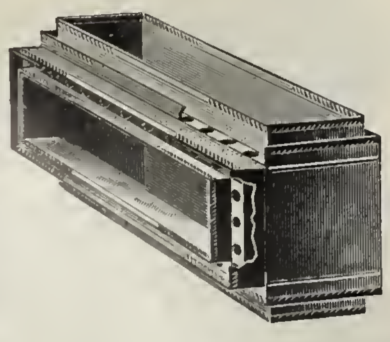
Scientific and Simple in construction. The Coking and Smoke-Burning is a trade-winner. Very economical. Has an efficient Hot-Blast. Exceedingly durable. A success for 29 years. Easy to sell. Easy to operate. Easy to install.

Let us send you a catalogue that tells you all about it.

THE PATRIC FURNACE COMPANY,
SPRINGFIELD, OHIO.

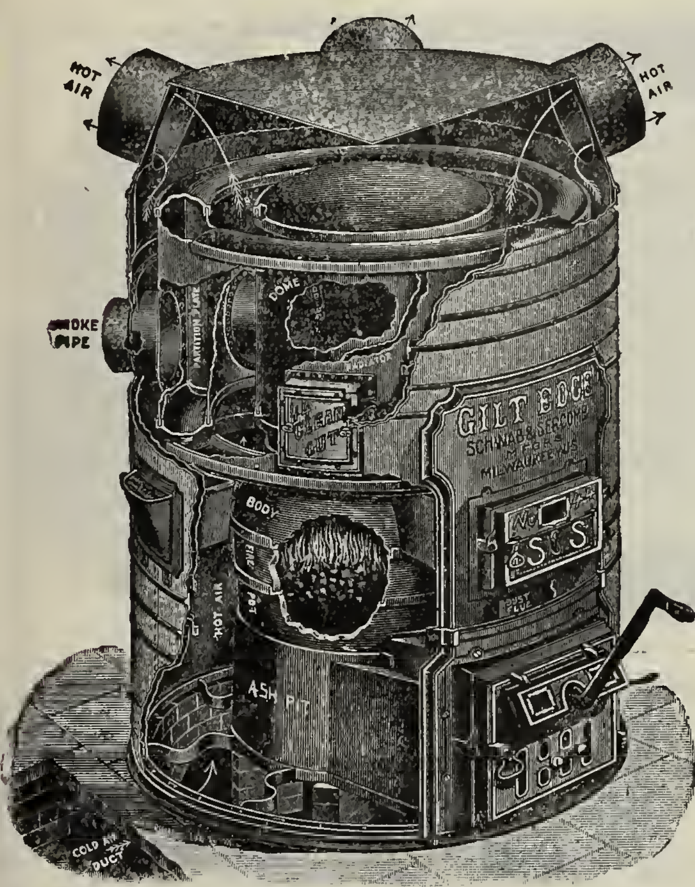
FURNACES EXCELSIOR HEATING SPECIALTIES PIPE

WE ARE MAKING
Very Low Prices
on our full line for present and future deliveries and solicit
Your Inquiries
Our Stove Pipe and Elbows, also Furnace Pipe are the Best made.



THE EXCELSIOR PARLOR ELBOW.

ELBOWS EXCELSIOR STEEL FURNACE CO.
38-40 W. MONROE ST.-CHICAGO. REGISTERS



Gilt Edge Warm Air and Combination Heaters

have merits that are all their own. They are made in a large variety of styles and sizes, each adapted especially to a certain class of fuel. Our line is "gilt edge" in every sense of the word. Every furnace we make is correctly made in accordance with right principles, and the price is right. Kindly write us for catalogue.

R. J. Schwab & Sons Co.,
Milwaukee, Wis.

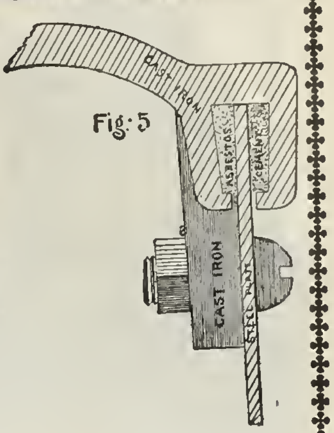


Fig: 5

Patented.

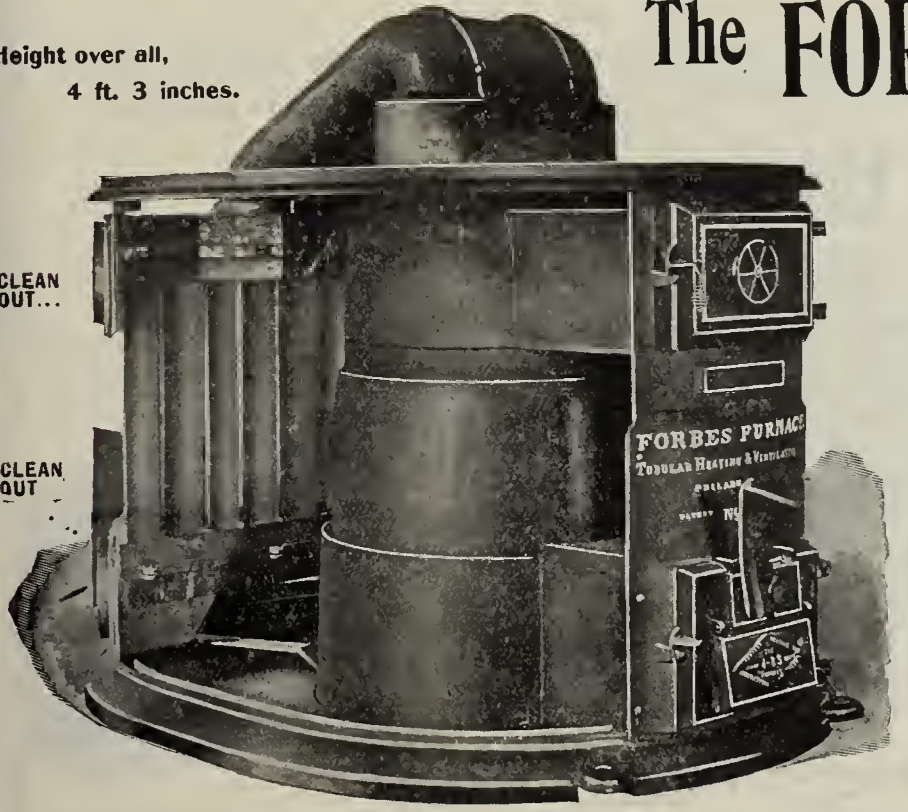
The Keystone Joint used on Gilt Edge Furnaces is the only permanent gas-tight steel and cast iron joint on the market.

The FORBES FURNACE.

Height over all,
4 ft. 3 inches.

CLEAN OUT...

CLEAN OUT



You run no risk in putting in the

Forbes Furnace.

When properly installed we guarantee them in every case.

They are constructed entirely of cast iron.

No sheet iron drums.

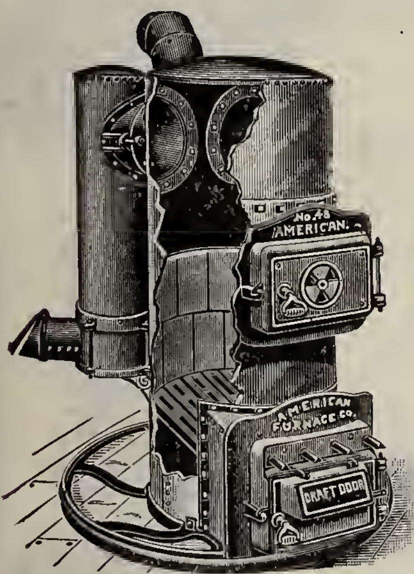
Our radiating tubes are 1/8 in. thick, and will wear for years.

Specially suited for low cellars.

SEND FOR CATALOGUE AND FULL PARTICULARS.

Tubular Heating & Ventilating Co.,
228 Quarry St., Philadelphia, Pa.

About Fire Pots.



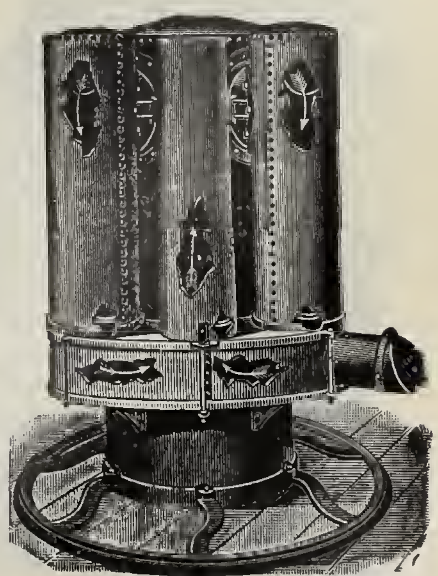
Burn Hard or Soft Coal, or Coke. Large Doors.

We formerly lined our fire pots with cast iron—then they cracked and warped. Now we use fire brick for lining and will guarantee it for five years. The lining is replaced through the fire door.

The **AMERICAN FURNACE** is made strong in places where other furnaces have proven weak; it is made of heavy steel and riveted tight like a boiler. Will burn any kind of fuel.

You can only build up a permanent furnace business by handling a first-class furnace. We manufacture for the better class of trade.

The American Furnace Co.,
1911-13 PINE STREET, • ST. LOUIS, MO.



Large Radiators, easy to clean out.

Write for prices and secure the agency before the other fellow gets it.

IF YOU ARE NOT SELLING THE

Peck-Williamson Underfeed Furnace

you have not the trade and are not making the money you might. Just a pull or two of the lever feeds the new coal from underneath.

The Underfeed Furnace consumes less fuel than any other furnace ever built. The coal is burnt more slowly. All the heat units from it, as well as from the smoke, are utilized and all smoke eliminated.

Our handsome booklet explains its splendid heating qualities and coal saving.

You may have this booklet and our special plans for selling. Ask for booklet about our Laundry Dryer also.

THE PECK-WILLIAMSON COMPANY,
CINCINNATI, OHIO.

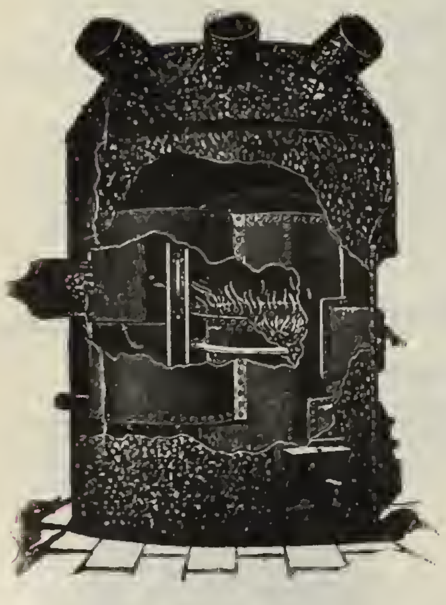
For a swell job

You ought to know our line—many a dealer loses an opportunity to make a good profit because he knows only heating stoves and furnaces.

We can post you concerning steam and hot water heating, so you can get a share of what is due you.

KEWANEE BOILER COMPANY

KEWANEE, ILLINOIS.



WEIR ALL STEEL GAS AND SOOT CONSUMING FURNACE.

THE HEAVIEST STEEL FURNACE MADE.

Absolutely gas and dust tight. A great heat-producer but a fuel saver.

MANUFACTURED BY

THE MEYER FURNACE CO.,
1300-1304 S. Washington St.,
SEND FOR CATALOGUE. **PEORIA ILLS.**

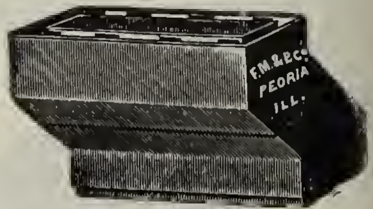
"The Handy Furnace Pipe."

MADE WITH A VIEW OF BEING SAFE.

The saving of labor in putting it up really makes it the cheapest hot air pipe on the market.

MANUFACTURED BY

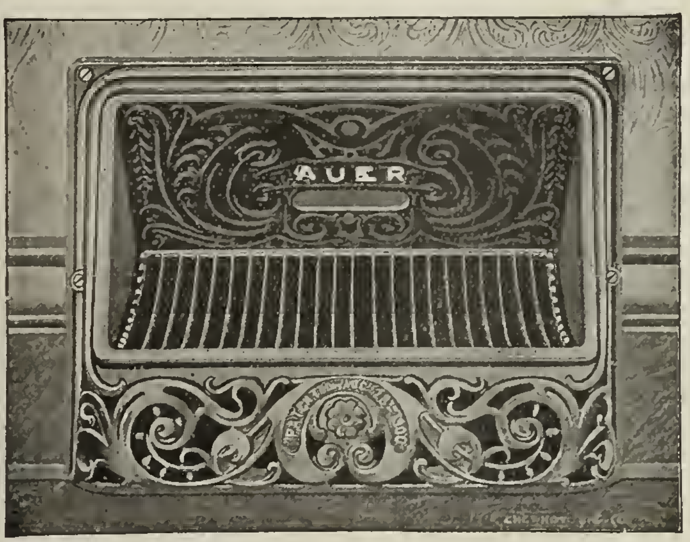
F. MEYER & BRO. CO.,
SEND FOR CATALOGUE. **PEORIA, ILLS.**



WINCHESTER

"After me, the doctor" seems to be the motto of some fitters. Most any radiation so long as it's iron, most any heater so long as it's cheap. The Doctor's services are called in. Better, by far, a "WINCHESTER" heater and no doctor's bills. Made for steam or water by SMITH & THAYER COMPANY, Boston, Mass., 106 Beekman St., New York.

HEATER.



When the Register is Open the Door Reflects the Air Across the Room.

Have You Registered

— FOR THE —

AUER SIDE WALL REGISTER

AND VENTILATOR?

HAS THE cheerful appearance of a grate or open fire place. No soiled walls. Ventilation and safety against fire are assured through the ventilator near the floor.

FOUL AIR is taken out instead of musty cellar air into the rooms.

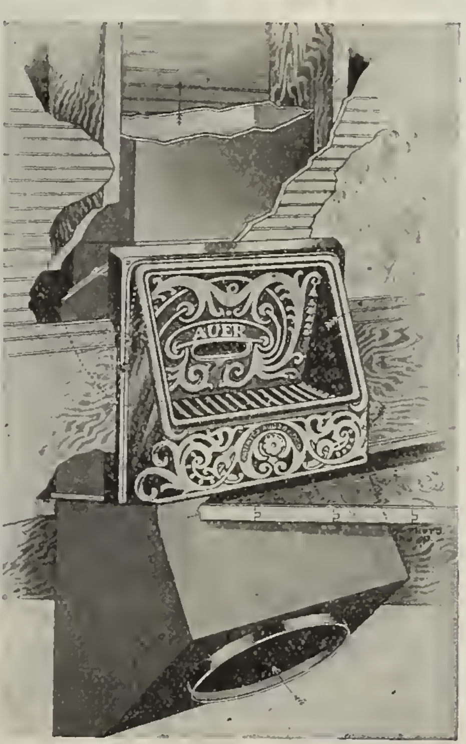
NO KNOBS or sharp corners projecting into the room.

NO GRILLE WORK to obstruct the air exit and accumulate dust.

INSTALLATION OF THE AUER REGISTER

Illustration showing Register heating one room on first floor with pipe connection for heating room on second floor, using one large instead of two small pipes from furnace.

Therefore less pipe obstruction in cellar, fewer elbows, angles, etc, and consequently less friction, less loss of heat from radiation, and less consumption of fuel. Insuring better circulation, warmer rooms and cooler cellars. Cost of installing furnace reduced by saving of pipes and labor.



THE AUER HAS SINGLE or DOUBLE REGISTER BOXES

Made of Sheet Steel and Japanned to prevent rusting. The future will demand a

WALL REGISTER.

If you want to control the furnace trade you will want the "Auer Register." It's the best as well as the cheapest. Write for 1902 price-list and discounts.

NOW IS THE TIME TO SECURE AGENCY.

HUNDREOS OF FURNACEMEN WRITE AS FOLLOWS:

L. MOBLO, the furnace man, Battle Creek, Mich., 1901, writes: "We are pushing the sale of your register, as your shipments will show. We have not sold a furnace job this year without putting in the AUER Registers. It has been a pleasure indeed to sell them, believing that my customers would receive more benefit from their use than from the old style floor registers. The convincing arguments combined with the true merits of the register in all cases sell them."

H. E. RIECK, Dayton, Ohio, says: "The Auer Register is bound to create a revolution in the register trade."

H. D. GREBE, Barrington, Ill., says: "If you don't sell my competitor these registers I am bound to get the furnacc jobs, as no other register will do."

THE BONNOT CO., Canton, Ohio, say: "We have secured contracts on the strength of having the Auer Register."

BRANDT BROS., Spokane, Wash., say: "We have used your register last season and are anxious this year to get exclusive agency for our city and surrounding territory."

W. W. VAN KIRK, Elizabeth, Pa, writes: "I have been using your register and think it is a peach and want the agency for that register. as my furnace trade this past year was large and all new houses that I heat will have Auer Registers every time."

When Register is Closed the Door Prevents the Accumulation of Dust and Lint.

THE AUER REGISTER CO.,

Main Office and Factory, TOLEDO, O., U. S. A.

HOT WATER
AND
HOT AIR

HEATING BY COMBINATION STOVES
AND FURNACES.

Suitable for Large or Small Houses, Stores, Conservatories, Barber Shops, Hotels, etc., etc.

Heat Water Quickly.
Circulation is Positive.
No Joints Inside to Leak.

THE NATIONAL PIPE BENDING CO
160 RIVER ST., NEW HAVEN, CONN.

STAMFORD FOUNDRY COMPANY

MAKERS OF

RANGES COOKING AND HEATING STOVES
HOT-AIR AND COMBINATION AIR AND
WATER FURNACES
LAUNDRY STOVES CONFECTIONERS' STOVES
CABOOSE RANGES ETC ETC

STAMFORD CONN

BOSTON GAS COOKER.

Low Priced, But Not Cheap.
OVEN 12 x 17 x 12 INSIDE.

One Extra Large Top Burner.
Flush Top,
A Perfect Baker.

RETAILS FOR $6

and gives the dealer an extra large profit.

SEND FOR PRICE.

MANUFACTURED BY
THE S. M. HOWES CO., 40, 42, 44 and 46 Union St., **BOSTON, MASS.**

GLENDALE
Stoves and
Ranges

Manufactured by
SOMERSET STOVE FOUNDRY CO.,
SOMERSET, MASS.
Send for catalogue.

SCRANTON CORUNDUM
& EMERY WHEEL CO.
1311-1315 Capouse Avenue, SCRANTON, PA.
Write for Catalogue.
OUR "BLACK DIAMOND"
artificial abrasive wheels are especially adapted for
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THEY ARE THE BEST.

"TORRID HEATER."
FOR STEAM OR HOT WATER.

It is Practical in Design.
It is Safe, Being Tested to 200 Pounds.
It is Easy to Manage and Keep Clean.
It is Durable.
It is Sectional and Easily Handled.
It has No Packed Joints.
It is Self-Feed or Surface Burning.
It has the Torrid Patent Rocking and Dumping Grate.
It is Low in Price.

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Factory: Hackettstown, N. J.

WORKING fifteen hours a day isn't of any particular credit to you if your competitor does a better and more profitable business in a ten hour day.

How much work you have done don't count; it's what results have you got to show.

Many high priced, handsomely ornamented complicated flue Furnaces won't accomplish anywhere near the economical and satisfactory results secured with a "**DIGHTON.**"

Results count—If you're in the Furnace business, sell a Furnace that you buy at a right price and that you **know** will make you a satisfied customer.

Sell the Dighton,

DIGHTON FURNACE CO., Taunton, Mass.

STARTING RINGS

For All Kinds of BLUE FLAME STOVES.

Regular size, 35c. per doz.
Large " 50c. " "

In ordering mention diameter of rings and name of stove.

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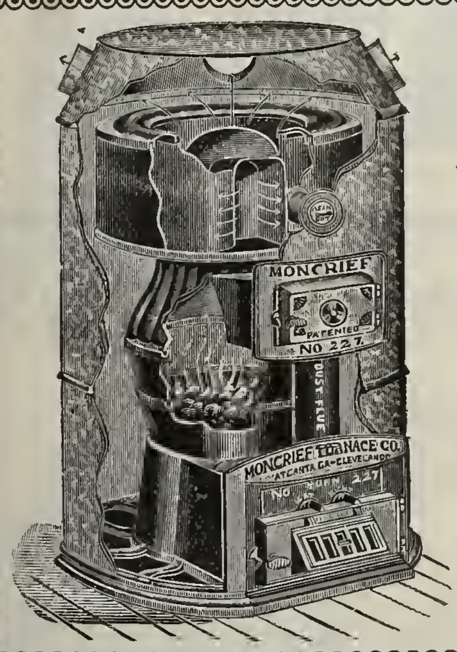

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PORTABLE and BRICK SET.

Unequalled in the Great Essentials---Simplicity, Durability, Economy, Capacity, Comfort.

NO BETTER MADE.

Write for catalogue. Special price to the trade.

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The MONCRIEF FURNACE & FOUNDRY COMPANY, ATLANTA, GA.

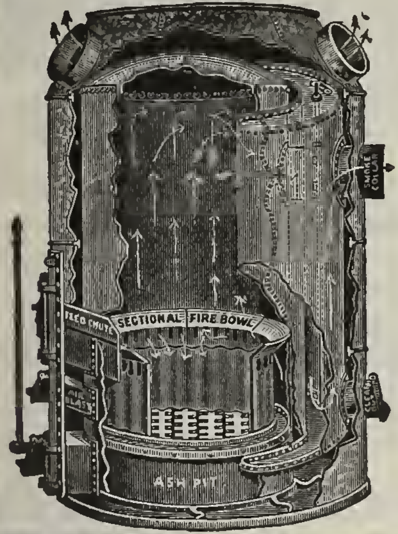
Registers are Very Low in Price Now.

You can make no mistake in placing your stock orders NOW. :: :: ::

It is not too early for a bargain. :: :: :: :: ::

INDEPENDENT
REGISTER CO.,
152 Champlain St., CLEVELAND, O.

The Torrid Zone Furnace



is a trade winner because it has points of merit peculiar to itself that can be found in no other steel furnace. Our new catalogue is now ready to mail and a description of our Hot Air and Hot Water Combination Furnace can be seen in it. We furnish either the cast iron lining or the fire brick at the same price. Our Wood Furnace is called a powerful heater by those who use it.

CATALOGUE FREE.

Lennox Manufacturing Company,

Eighth Ave. and Frederick St.,
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Common Sense Circulator and Radiator.

(Patent applied for.)

This Heater is so simple that its superiority over all others is plain. Being open at each end the cold air is taken in at the bottom, passing out at the top heated; producing a circulation unequaled by any radiator. Is easily cleaned or repaired. Takes the place of a joint of pipe. Diameter of casings, 10½ and 12½ inches. Send for prices.

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Best Materials and Workmanship. Prices Low. Mail Orders Promptly Filled.

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BOILERS and RADIATORS

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ECONOMIC IN FUEL CONSUMPTION.

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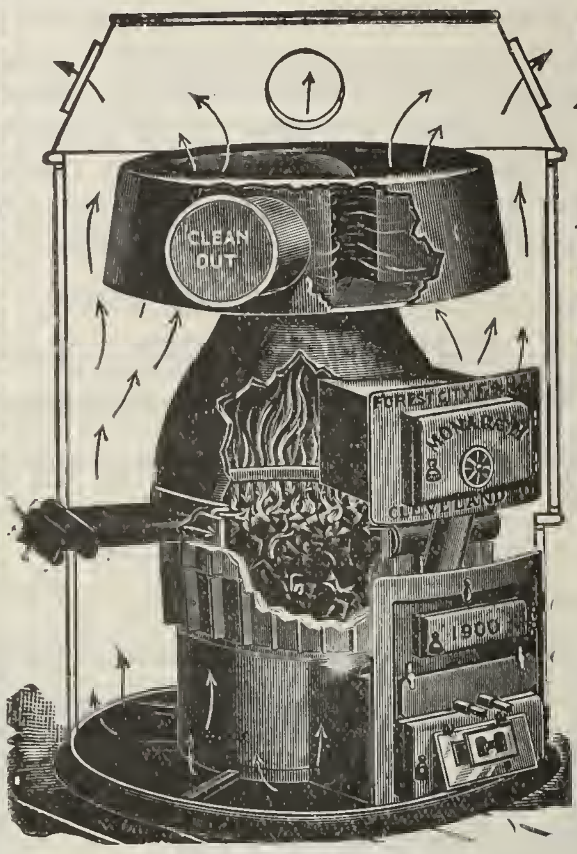

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All Cast Iron.
For Hard and Soft Coal.

Send for 1902 Catalog and discounts.

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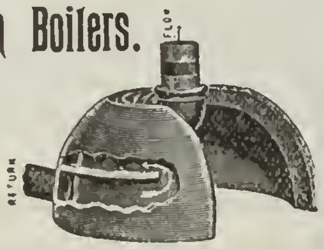
Gray Iron Castings to order. High grade only.

The Champion Hot Water Combination Boilers.

They Fit Any Furnace.



Base section when used without ring sections.

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These Boilers are made in three sizes diameter, and from 100 to 00 square feet radiation capacity.

Will heat those cold rooms or an addition to the building. Will increase the capacity of any furnace. Are cheaper than coils and will do more work.

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"A B C" BLAST GATES

For closing pipes supplying blast to Furnaces, Forges, Boilers, Etc.

Simple, Inexpensive, Reliable.

Send for particulars.

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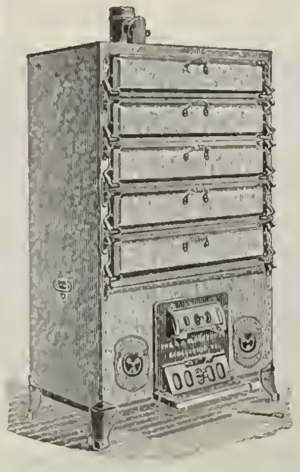

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Made in all sizes, single and double, for coal, wood, natural or artificial gas.

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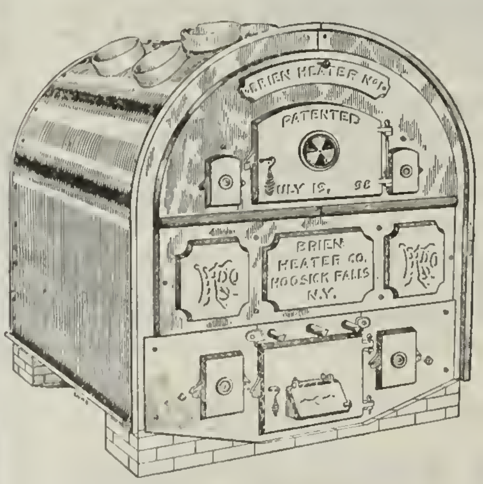
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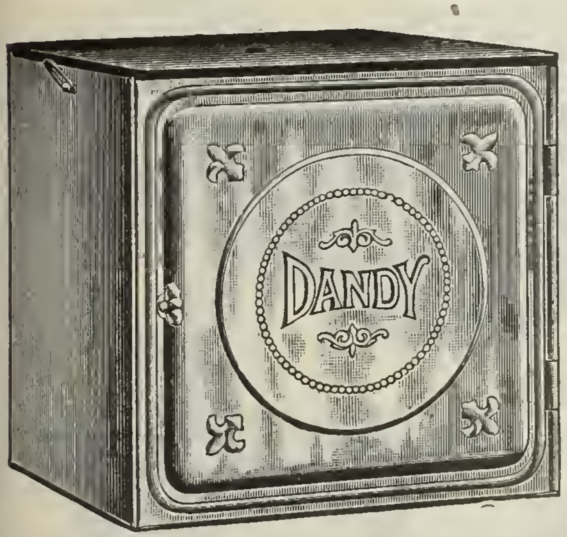

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THE

Dandy Oven.

A double oven, made of polished steel or tin, beautifully japanned top and front frame, drawn steel bottom rim, superior to the breakable cast-iron rims. All-wire oven racks. Adapted for cast-iron lamp stoves, tin stoves and gas hot plates. Send for price.

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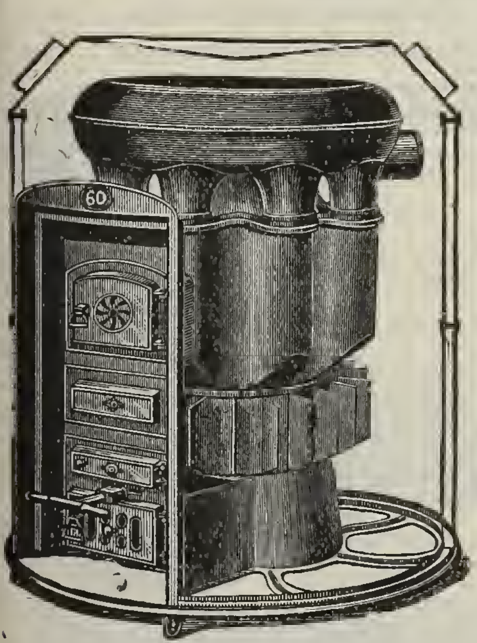

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HAVE BEEN COPIED
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An Absolutely Gas Tight Furnace
Without Bolted Joints.

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WARM AIR FURNACES

Heavy Castings, Tubular Radiator,
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ALL INSIDE THE CASING.

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VARIOUS FORMS OF VENTILATORS or CHIMNEY TOPS 41–45
CONDENSATION IN STOVE PIPES - - - - - - 46, 47
SMOKE PIPE FOR WOOD FURNACES - - - - 48
REMEDYING DOWN DRAFT IN CHIMNEY - - - - 49–51
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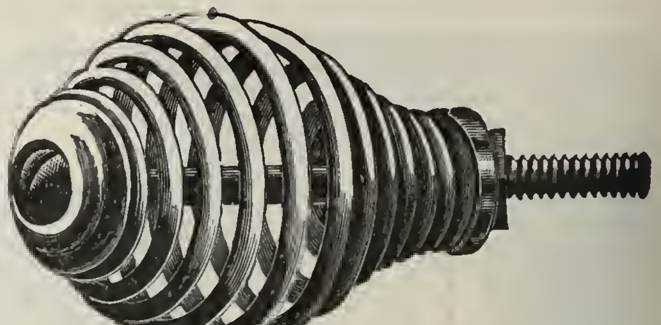

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FITS ANY STOVE.
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We can supply you with fire clay, plastic lining, stove brick, fire brick, gas fuel, stove polish, aluminine paint, stove pipe, sewer pipe, mica, roofing cement, asbestos furnace cement and stove putty at prices to gladden careful buyers.

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Perfectly round and true to size. With long ends, DOUBLE LOCK SEAM in throat or under side of Elbow.

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First-class in wood and iron.

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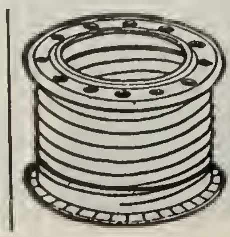

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Can easily be adjusted to any thickness of wall, and when screwed up tight against plaster will not work loose and allow the plaster to crumble and fall.

It is perfectly fire-proof, low in price, and never fails to interest customers.

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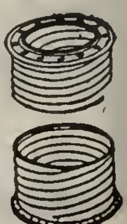

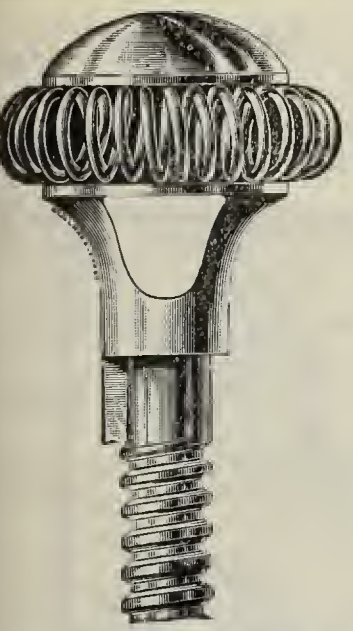

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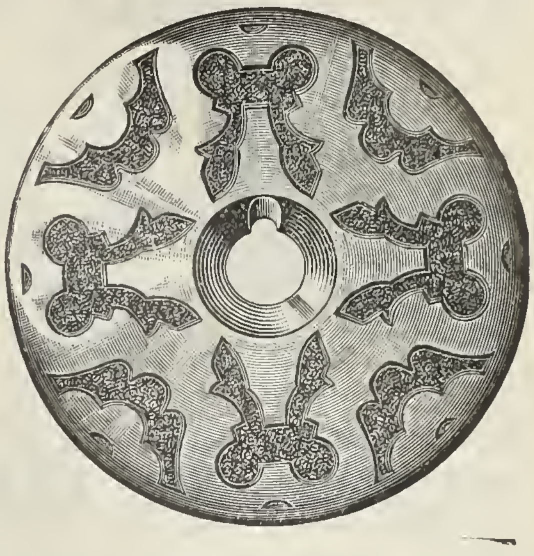

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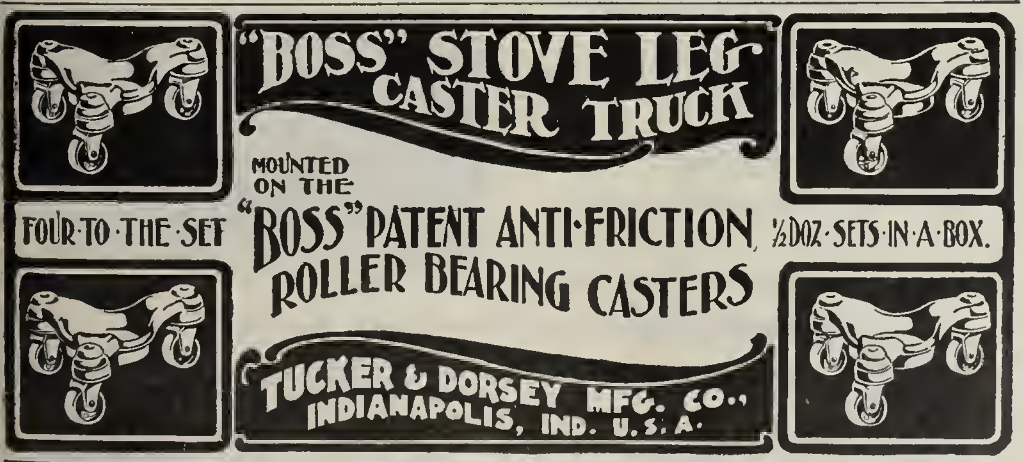

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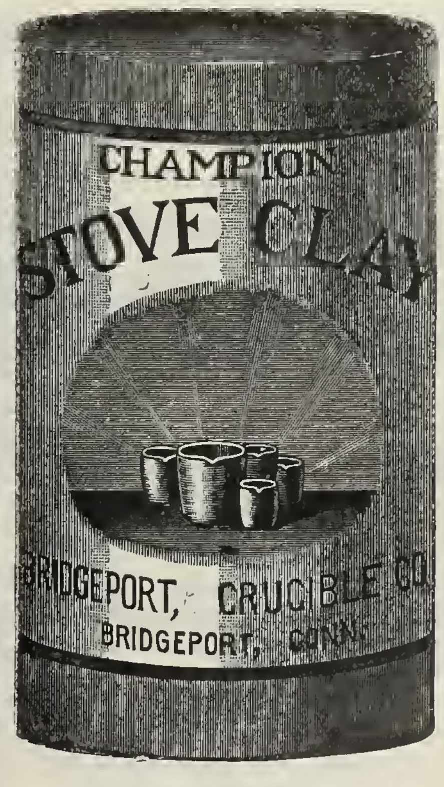
Is the only brand made of crucible materials, viz.: Imported German Fire Clay and Plumbago from Ceylon.



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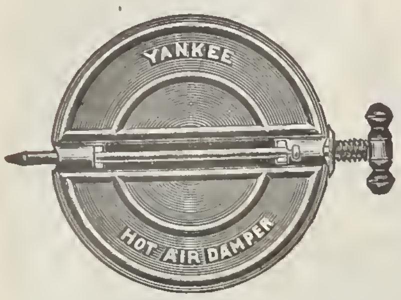
Your jobber can furnish the goods.

BRIDGEPORT CRUCIBLE CO.
Bridgeport, Conn.

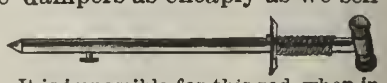
The YANKEE Hot Air DAMPER (IMPROVED.)



Sizes : 6, 7, 8, 8¼, 9, 10, 10½, 11, 12, 12½, 14 and 15.

THE YANKEE EXCELS.

Above All – Cheapness – a dealer cannot possibly make dampers as cheaply as we sell the Yankee. Easily put in and taken out of pipes. Stiffest, quickest-working and neatest damper on the market.



It is impossible for this rod, when in position, to move either way.

ROD POINTS : Has wood enameled handle. Wood handle cannot come off. Washer and spring cannot fall off the rod. Same size of holes are punched on each side of pipe. Rod made of ¼ in. cold-rolled steel and slips into damper very smoothly. **Sample sent to any Dealer without charge.**

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Place Your Contract Now.

Special Machine Screws.
Screws Milled from Solid Rod.
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FOR PLUMBERS,
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Stoves, Ranges, Furnaces.

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RINGS.

SPECIAL TUBING.
Cut to Length and Plated.
FLAT STRIPS & CORNERS.
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PRESSWORK
SOLICITED.
Quality and Finish the Best.

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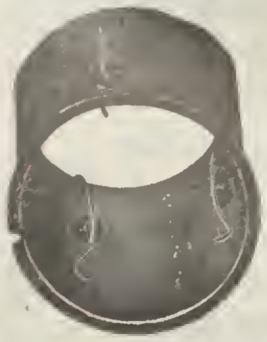
THE S. & S. PATENT

Stove Pipe Thimble



Locks the Pipe from Pulling Out, and from Pushing In and Closing the Draught. Will last a lifetime. Nothing to wear out, and costs but a trifle. *Send for sample* and prices.

City Forge and Iron Works,
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Perfect Elbows

PATENTED.

The Railroads have a knack of "hurrying" things and nothing gets more used up in transit than cheap elbows.

You can reduce your risk of loss from this source 90% by buying the "Perfect" Elbows. You can order now from our nearest house for shipment any time this year.

ALL SIZES, 3 to 8 INCHES.
Common One Pass, Refined Blue, Planished and Galvanized.

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THE TRIUMPH ADJUSTABLE STOVE PIPES TAKE THE LEAD:

They are easy to put together.
They are easy to take down.
They can be nested for storage.
They save freight.
They need no wiring.
They cannot telescope.
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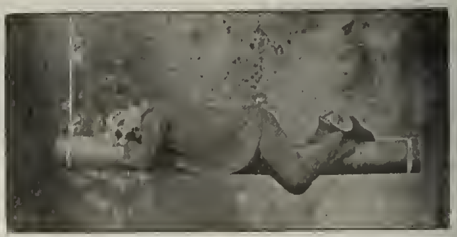

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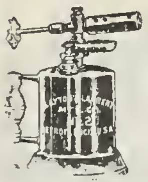

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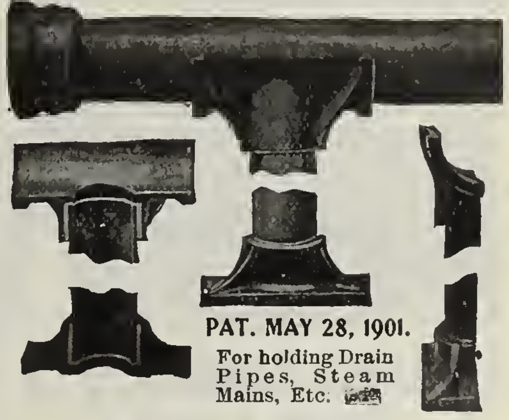

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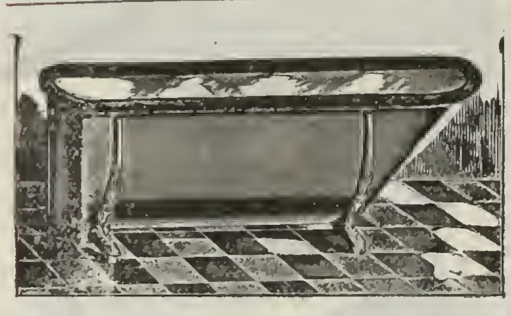

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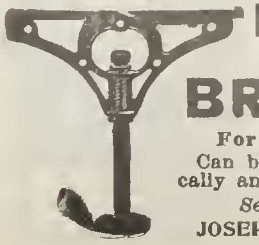

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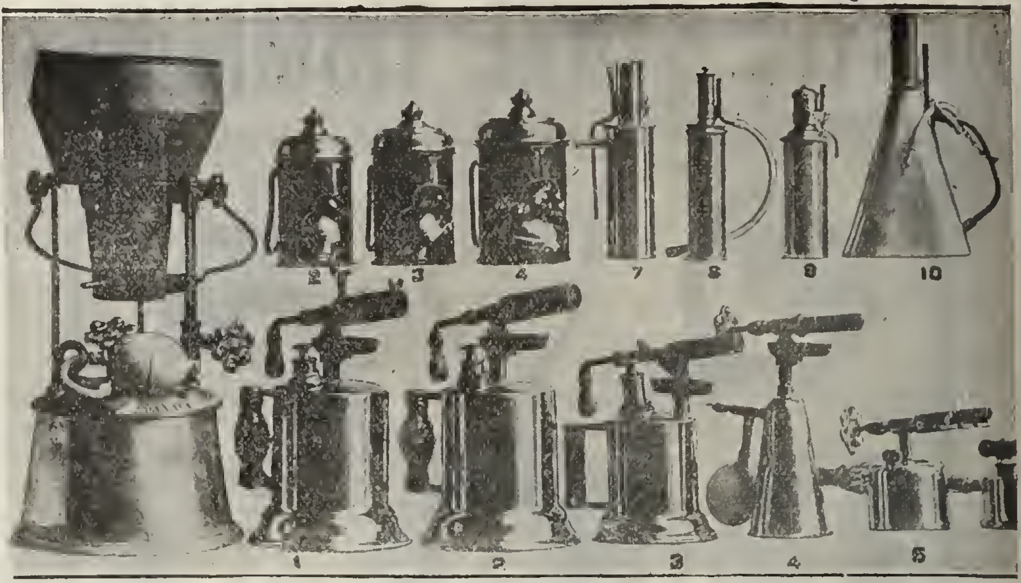

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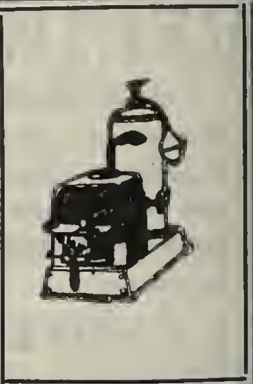

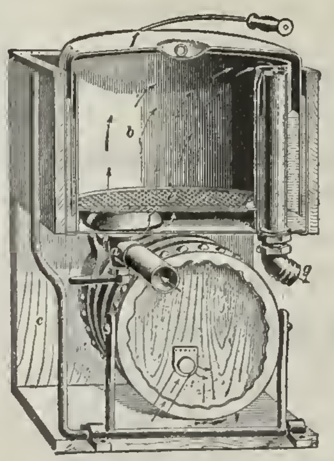

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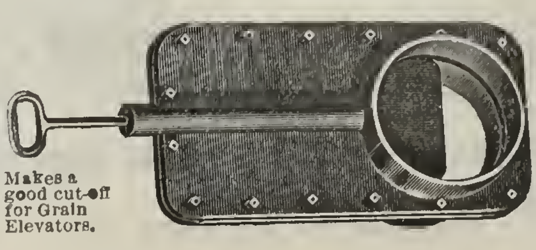

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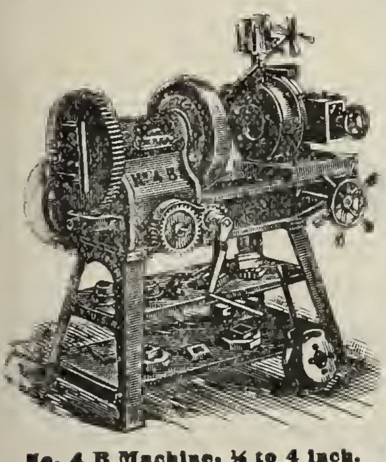

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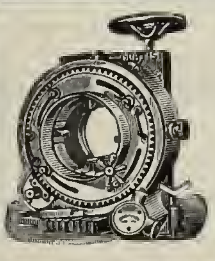

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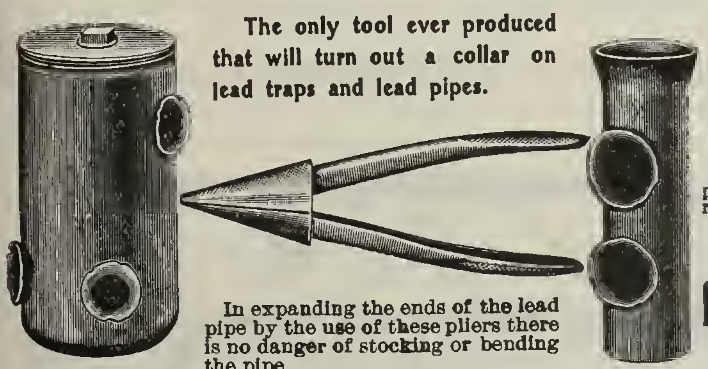

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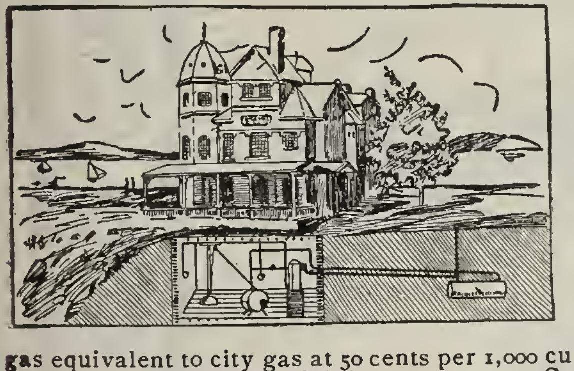

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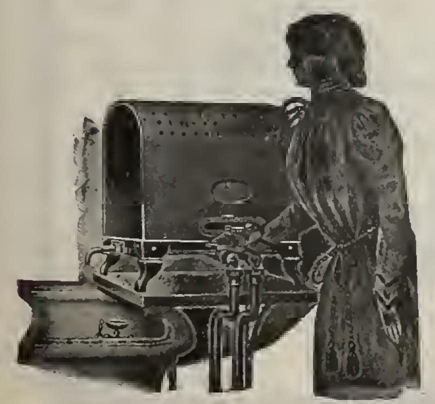

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The Building Situation.

Reports from all parts of the country indicate an active season in the various branches of the building trades. Throughout many sections projects are under way calling for the construction of large numbers of dwellings of moderate cost, while office buildings and business blocks are being erected or are contemplated to an extent which probably exceeds all previous records. Statistics compiled by *Construction News* show that in March, 1902, there were 8489 permits issued in twenty-three of the larger cities of the country. These improvements called for an expenditure of $32,387,240. In March, 1901, which was a month of marked activity in the building trade, the operations aggregated 7605 buildings at a cost of $29,796,320. This shows an increase of 884 permits for last March over the figures of the same month a year ago, and of $2,590,911 in their cost, or a general gain of 8 per cent. Here and there we hear of building operations being temporarily suspended by reason of higher prices of materials which enter into construction or by the scarcity of structural iron and steel. These deterrents, however, are likely to be only temporary, and projects which are now held in abeyance will doubtless be pushed to completion ere the close of the building season. Thus far the labor situation has developed no very serious aspects, although minor differences have arisen in many sections of the country, as is very often the case at this season of the year. In some instances the workmen have secured an advanced scale of wages, and in others the men are out on strike pending a settlement of their demands. Taking the country over, however, there is perhaps no more disturbance than is natural, considering the diversified interests, and the outlook is in no sense discouraging.

The Amalgamated Association.

As was quite generally expected, the convention of the Amalgamated Association at Wheeling adopted with practical unanimity the report of their Wage Scale Committee, thus stamping with their approval the action of President Shaffer and his associates in arranging the wage agreement with the American Sheet and Tin Plate companies and the Republic Iron & Steel Company. The ratification of the wage scale agreement for the coming year is a distinct victory for Shaffer and his policy, for it was he who originated the idea of signing the scale in advance and had the policy sanctioned by the Executive Board of the association. Much has been said and printed in the past few months about the strong opposition to President Shaffer and his conduct of association affairs that was declared to exist among the Amalgamated workmen, and it was even freely predicted that Mr. Shaffer's days as a leader were numbered. His re-election as president shows that the great majority of the members of the Amalgamated Association recognize his executive capacity and are prepared to support him in the leadership. While Mr. Shaffer's attitude during the great steel strike last year occasionally gave cause for sharp public criticism and some of his actions at times savored of the demagogue, his subsequent record indicates that he has taken to heart the lessons of that great struggle and embraced the more conservative policy of conciliation in preference to that of antagonism. It is a matter for congratulation, in the interests of the iron and steel trade, that the leaders of the Amalgamated Association have apparently grasped the idea that the true interests of both employers and employed lie rather in harmony than in conflict. The actions of the Amalgamated Association convention indicate that the workmen appreciate the advantages accruing from the adoption of a continuous wage scale in removing the risk of another prolonged strike, with its attendant suffering and irritation. Doubtless this aspect of the case appealed to the majority of the men with sufficient force to enable them to place in the background any personal feeling they may have entertained in regard to President Shaffer and his administration of the affairs of the association. It is to be hoped that the tin house workers at their convention, shortly to be held, will follow the example of the Amalgamated Association and agree to a continuance of the existing wage scale at the tin plate mills. This would remove every trace of labor uncertainty from the tin plate industry for the next twelve months.

Rated Capacity and Actual Product.

Some of the financial writers have made efforts recently to give numerical expression to the position which the United States Steel Corporation occupies as a producer of pig iron and steel as compared with the total output of the country. They have turned to the published statements of the capacity of the plants of the constituent companies, and have compared the figures thus reached with the total rated capacity of all the works in the United States. The method is plausible, but unfortunately is so inaccurate that the results of the comparison are worthless. To begin with, rated capacity is a very flexible quantity and frequently different operating officers in the same concern reach different figures. When inclined to be sanguine they are apt to take past records during brief periods as the basis for their estimate.

However, that is a minor matter. The grave mistake is that the capacity of all plants is put on a basis of equality, when as a matter of fact some of them can only run under extraordinary conditions. In other words, the modern works and the old cripples are all jumbled together. Quite a number of the latter, although carried along in the lists, are in such shape that even in booming times like these they are not running. It is quite evident that if there be segregated from the whole rated capacity one group of modern furnaces, say, like those of the constituent companies of the Steel Corporation, a comparison figured out on a percentage basis would lead to a serious underestimate of the power of the group. As a matter of fact, at the present time with all the blast furnaces running at full pressure the output of the Steel Corporation is probably close to 650,000 tons per month, out of a total production of coke and anthracite pig of 1,450,000 tons per month, or a little under 45 per cent.

Answering Letters.

It is becoming a matter of complaint in regard to American business men that they are apt to make long delay in replying to letters of inquiry and, in not a few cases, to leave such communications unanswered altogether. The complaint comes from abroad as well as from this country. So often has the matter come up of late that it would seem as though the practice of ignoring communications must be growing. It is a pity if this is really the case, for it argues not only a deplorable lack of courtesy, but also a carelessness and want of foresight that is inconsistent with the conduct of a well regulated and progressive business. Possibly the present prosperity is to a great extent accountable for this failure in politeness. Business is so active in many lines and men of affairs are so busy that, perhaps, they really have little time to bestow upon inquiries that may not be directly connected with present and more pressing interests. Consequently they are put aside and often forgotten. This, however, is short sighted policy. Business may be booming to-day and orders so plentiful that new ones are not desired, yet there may come a time in the future when business will be eagerly sought for, and then it may be found that would be customers who have been repelled by want of attention to their courteous inquiries in the boom time resent their treatment and, in their turn, repel the advances of those who want their custom. No business man can afford to neglect replying to his correspondents. Politeness pays in the long run, and the lack of this quality is a serious defect in any business. It will be found that the most successful and progressive concerns make it a scrupulous rule to answer every inquiry received without delay. No doubt much foreign trade has been lost to American houses through delay or neglect in answering inquiries.

Sanitary Instruction for Women.

In a recent issue of the *Pratt Institute Monthly*, the official publication of the Pratt Institute, of Brooklyn, N. Y., some interesting details are given regarding the work of the Department of Domestic Science, which is one of the important branches of that institution. This department was instituted about ten years ago. In the words of the last annual report of the director of the department, "It came into being to render potent in life the belief that malnutrition, disease, maladjustment of life, inefficient work, unrest, needless exhaustion and many similar human ills would be lessened, if not dissipated, were the principles of nutrition and other laws of life to be applied wisely to every day life." Acting on this idea, instruction was first given in practical house work, such as cooking, cleaning, serving, &c., and was subsequently extended to the natural science and art underlying such work. In connection with the more scientific part of the curriculum the pupils, who are, naturally, of the female sex, are given a course of instruction in chemistry, plumbing and heating by means of lectures given by the instructors in the trade school of the Pratt Institute. These lectures, which come under the subdivision of "household economics," embrace the underlying scientific principles connected with plumbing and instruction in methods conducive to the maintenance of sanitary conditions in the home. Some attention is also given to the sanitary requirements called for in the construction of a house. The principles of heat and their application to dwellings are also inculcated, thus giving the future housewife an intelligent idea of matters which are so important to the well being and comfort of the home. Probably this is the first instance in which such subjects as heating and plumbing have been taught to women in an institution of the character of the Pratt Institute. The utility of such instruction is obvious and this new departure may be followed with advantage in other similar educational institutions.

Conveniences of the Modern Office Building.

Frequent reference has been made to the conveniences of tenants found in some of the modern office buildings in New York City, but it is probable that readers of this journal do not fully realize the extent to which these features are carried at the present day. In one of the latest skyscrapers there is to be found a newsstand, tobacco counter, *café*, restaurant (with music at lunch), drug shop, press bureau, physicians, stenographers, barber (with his modern associates, the chiropodist and the manicurist), dentist, laundry agent, cable, telegraph, telephone, automobile information, theater agent, obituary bureau, notary public, &c. You can take an elevator to a man who will draw a will, or one who will arrange a funeral; without going from under your own roof you may liquidate a corporation or buy a locomotive. There are ten elevators in a bewildering row, which announce their coming by electric signals, some going 13 floors at a jump. Having all this so near is what spoils the New Yorker for any other city in the world—unless he is trying to get away from it.

A Gas Phenomenon.

The *Chronicle* of Houston, Texas, is responsible for the following:

> The drillers on the well being sunk near Big Hill, in Matagorda County, have struck a marvel in gas. In a letter written recently, a gentleman visiting that neighborhood says: "At a point nearly 900 feet deep they struck a gas formation with pressure much stronger than any well on Spindle Top or any other part of the coast country, and the drillers, not knowing what to expect, had the hole torn up and lost two holes just as they struck a rock that shows from rocks blown out a formation exactly like the cap rock at Spindle Top.
>
> "P. M. Lea of Lea & Son, Beaumont drillers, is drilling the well. He has made a permanent gas well out of the first well and so great is the pressure that he has piped the gas into the boiler as a settling tank to prevent getting grit in the engine, and then connects it direct with the engine and pumps, and runs the engine from direct pressure without steam or fire, and is now down 400 feet with the third well with the gas power. The pressure is not all turned on, yet the boiler blows off all the time at 110 pounds.
>
> "There is another phenomenon connected with the use of the gas. After it is used for power in the engine and pumps the escape pipe gives the appearance of pipes in an ice factory filled with ammonia. The ice freezes a quarter of an inch thick on the outside in contact with the atmosphere, and chunks of ice form on the inside from condensation of gas and blow out when they shut off the gas sufficient to push it out."

Another instance of the present day tendency toward arbitration and conciliation is presented in the fact that the American Newspaper Publishers' Association, embracing a large majority of the leading newspapers of the country, have executed agreements for industrial arbitration with the International Typographical Union and the International Printing Pressmen's and Assistants' Union, to continue in force for a period of five years from May 1, 1902.

THE NEW YORK STOVE TRADE.

Although the attention of the New York stove trade is largely fixed upon the rapidly approaching convention of the National Association of Stove Manufacturers the more important conditions of the trade have not been neglected. As has been previously indicated, the advance in molders' wages and in the price of iron, as well as the difficulty in securing the raw material, and the increased cost of all the supplies which enter into the construction of a stove have led to independent advances in the net cost of many goods. Some houses have issued circular letters calling attention to the conditions above referred to and stating that on May 1 there would be an advance of 5 per cent. on all their goods. The stove associations in other districts have already made such advances, but in the vicinity of New York, owing to the absence of any organization, such action could only be taken independently by different houses. If the conditions now prevailing continue it is probable that the example set by some of the New York manufacturers will be followed by the others.

PREPARING FOR THE STOVE CONVENTION.

Notwithstanding the efforts of the members of the National Association of Stove Manufacturers to make it perfectly clear that they invited themselves to New York for the convention this year, there has been a feeling of confidence on the part of the New York members that, at the proper time, steps would be taken to give the National Association evidence that their visit to New York was appreciated as an honor and that courtesies would be extended that would make a pleasant diversion from the more serious matters which would engross the attention of the delegates. To this end a local committee has been appointed and preparations are well under way for an entertainment that will be worthy of the New Yorkers and tend to the enjoyment of their guests.

* * *

It is customary, wherever the National Association of Stove Manufacturers meet, for the local members to put their best foot foremost in everything that will come under the eye of the visitors. This is particularly to be noticed in the Beekman and Water street district of New York at the present time. The Boynton Furnace Company have newly painted the samples of the Boynton furnace in front of their establishment, at 207-209 Water street, besides freshening up the interior of the store. Directly across the street, at 208 Water street, the Graff Furnace Company have given a new coat of paint to the sample of the Faultless furnace which has become a landmark in that district. A little further up the same thoroughfare Floyd, Wells & Co. of Royersford, Pa., have flung out a new gilt sign at their branch office, at No. 210. Just above them Eugene Munsell & Co., not to be outdone by their neighbors, are treating the front of their building to a new coat of paint.

* * *

Around the corner, J. M. Litchfield is arranging the goods of the Penn Stove Works of Reading, Pa., so as to leave none of their attractions hidden. At 284 Pearl street, A. L. Canfield has the Beaver line of the Danville Stove & Mfg. Company of Danville, Pa., attractively displayed, and Isaac A. Sheppard & Co. have also freshened up their sample room. The Syracuse Stove Works are making an attractive display of their line of registers, in addition to the Welcome stoves, ranges and furnaces. At the Union Stove Works, in addition to their line of coal goods, a very attractive show is made of the company's extensive line of gas cooking and heating apparatus. Those of the out of town members of the association who find their way from the Waldorf-Astoria to the stove district of New York City will notice that their visit has not been unexpected.

THE CLEVELAND FOUNDRY COMPANY, Cleveland, Ohio, are directing the attention of the trade to their Sterling-Puritan Wickless Blue Flame Oil Cooking Stoves by means of a 20-page pamphlet which they have just issued. The merits of the goods are set forth in a way to interest the dealer and illustrations are presented showing the styles in which the goods are offered. In addition to Stoves, attention is given to Ovens and Repairs, and also to the Puritan Oil Heater, equipped with a wick stop which is claimed to prevent smoking.

QUESTIONS ON FURNACE CONSTRUCTION.

BY D. Y. N.

Having a few ideas on furnace setting and hot air heating, I present them with the hope that furnace manufacturers and furnacemen will comment upon them. In setting and operating furnaces in Iowa it is quite common practice to rotate the air. The main object is to get as complete a circulation from the furnace to the room and from the room back to the furnace as is possible. Now what I would like to ask from those who make a study of furnace construction is this: Could not a furnace be so constructed as to take the air that is necessary to promote combustion from the cold air pit under the furnace, instead of taking the air through the draft slide in the ash pit door and from the room in which the furnace sets? Then, for the purpose of checking the draft, could not the air also be taken from the cold air duct? This would mean, when in addition to the main cold air duct an inside air duct was provided, the foul air could be exhausted from the building and substantial ventilation be effected.

I think that if a furnace could be built somewhat along these lines it would greatly facilitate the heating of the room and the circulation of air. When the check draft was open the chimney would draw cold air either from out of doors or from the house, and, as it passed out of the top of the chimney, it would help the ventilation of the building, and in no way interfere with the successful operation of the furnace. I am not a furnace builder, although I have spent many years in setting furnaces and closely observing their construction and operation, and think that something along the lines suggested would be beneficial. I hope that furnace manufacturers and all who are interested in furnace work will think over my suggestion, and am satisfied that *The Metal Worker* will grant the space necessary for pointing out the merits or demerits of such an apparatus as that suggested.

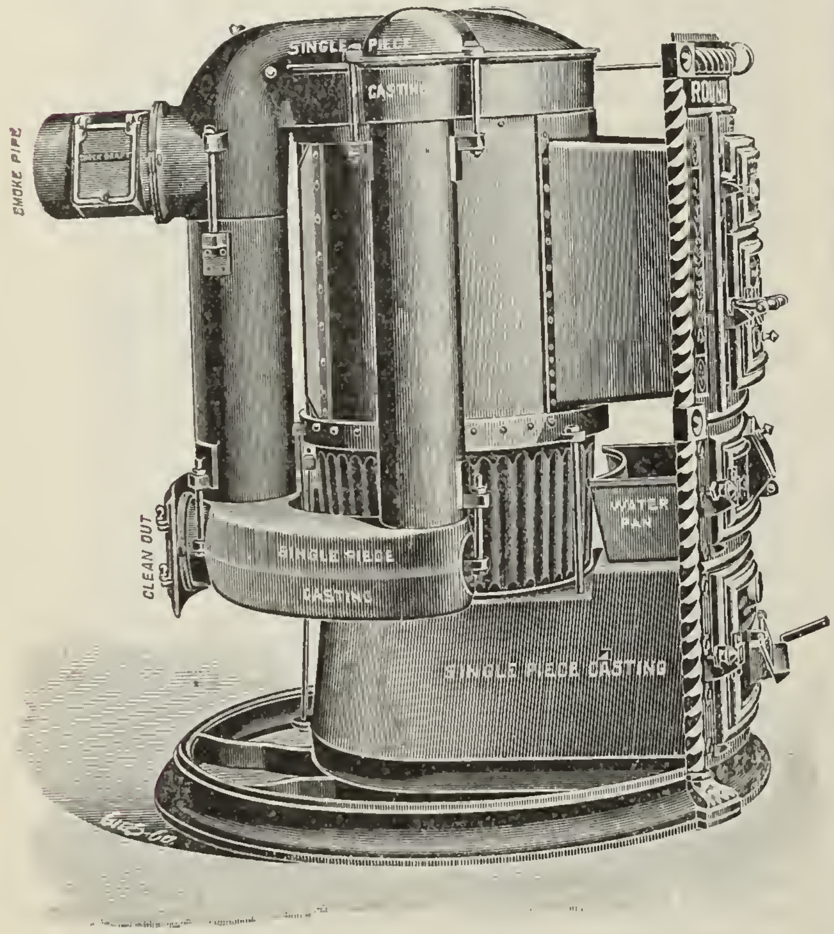
Cleveland Co-operative Stove Company.

The Cleveland Co-operative Stove Company, Cleveland, Ohio, have just issued, in combination with the Chattanooga Stove Company of Chattanooga, Tenn., their thirty-fourth annual catalogue of the stoves, ranges and heaters which they manufacture. A careful inspection of its pages shows that the manufacturers have eliminated a number of old patterns and added several new ones, embodying the latest features, the object being "to make the best goods possible for the least money." The volume is made up of 136 pages, profusely illustrated and bound in covers of attractive design. The goods shown are for the season of 1902-1903, and embody lines of such variety as to meet all reasonable requirements.

The leading place is given to the Royal Grand steel range, which is intended for using hard coal. The body is made of heavy planished steel, the bottom plates are double and lined with asbestos, thus preventing radiation from the oven to the floor; the fire box has sectional cast iron linings, the top is sectional, the flues and the end of the fire box are lined with heavy asbestos, and the top warming closet has a swell front door. Other members of this general class are the New Grand and the Royal Rival, both of which are of neat exterior and embody the modern improvements. A long line of cast cooks and ranges follows, some being designed for using coal or wood as a fuel and others intended for burning wood only. The leading place among the heaters is given to the Royal Ruby square base burner, made in three sizes, for hard coal or coke. The Royal Opal, another member of this class, is also made in three sizes, and is referred to as a high-class heater at a moderate price. A varied assortment of Oak, Franklin, Cottage Parlor, Globe, Cannon, laundry and air tight stoves are also presented. The catalogue concludes with a comprehensive index.

THE ROUND OAK FURNACE.

When the Estate of P. D. Beckwith decided to engage in the manufacture of a furnace they determined that it should be as perfect a piece of heating apparatus as modern progress demanded. They had acquired a reputation for their Round Oak stoves, which had made the town of Dowagiac, Mich., known throughout the length and breadth of the United States. The Round Oak stove had been the exclusive product of their works from the beginning, and to engage in a new line was a matter of importance to them. The company spent several years in perfecting their Round Oak furnace before they presented it to the trade, the experiments covering heating surface, fuel economy, durability and other details of construction to eliminate weak features. A recent visit to Dowagiac by a representative of *The Metal Worker* developed many points of interest in connection with the manufacture of this furnace and its special features which are herewith presented.



The Round Oak Furnace.—Fig. 1.—View of Furnace without Casing.

The design of this furnace, as shown in Fig. 1, requires modern foundry facilities and also necessitates the employment of special machinery in the mounting and fitting shop. The construction calls for several large castings, which are not only heavy but are difficult to make. They comprise the large one-piece top, the one-piece bottom circular radiator and the one-piece ash pit.

The one-piece top was adopted to overcome upward expansion. The three flues are suspended from it by means of lugs and bolts, as shown in Fig. 1, cup joints being utilized for making the connection gas tight. This casting weighs 265 pounds for the largest size furnace. Large flasks are required in molding these castings and the foundry is fitted with cranes for handling these flasks and the castings with convenience. A view of this operation is given in Fig. 2. The one-piece bottom radiator is a difficult casting, forming a tubular semicircle of irregular shape. It is attached to the bottom of the three flues, also by means of lugs and bolts, as shown in Fig. 1, cup joints being used to make the connections gas tight. The one-piece ash pit is also shown in Fig. 1.

Another feature of the furnace is the casting of door frames on the ash pit and the feed door extension. This prevents any chance of forcing gas up back of the door frames. Fig. 3 shows one of these castings being taken from the sand in the foundry.

The body of the furnace is constructed of No. 6 sheet steel to insure a durable body. It is riveted to the cast top, the two parts overlapping liberally, and the joint thus made being perfectly gas and air tight, special machines being used for this work.

Fig. 4 shows one of the expert furnace mounters completing the inspection of a furnace. Every furnace is said to be fitted so perfectly air tight that it will hold fire 24 hours without the use of the check draft in the pipe collar. The ash pit door is ground on and fitted so tight that if completely closed it will extinguish a hard coal fire. The large feed doors are also ground and fitted perfectly tight. Each furnace is completely mounted in the shop, then thoroughly inspected in the same manner as a Round Oak stove, after which it is taken apart for shipment.

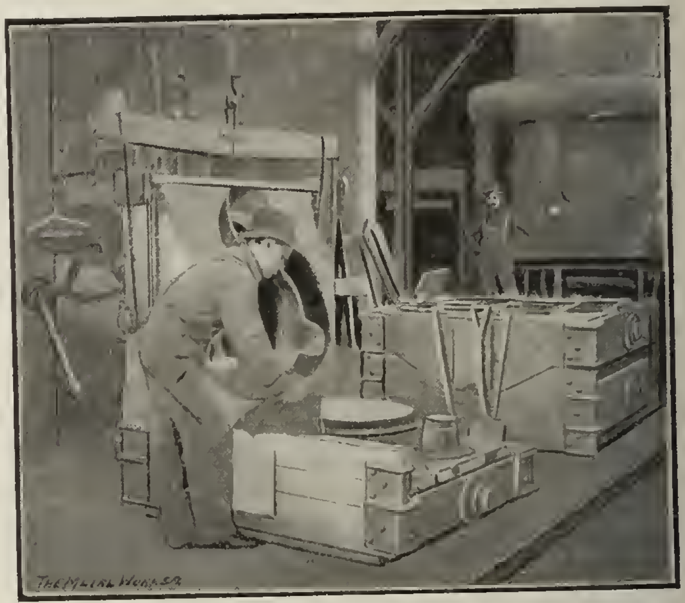


Fig. 2.—Equipment for Making Heavy Castings.

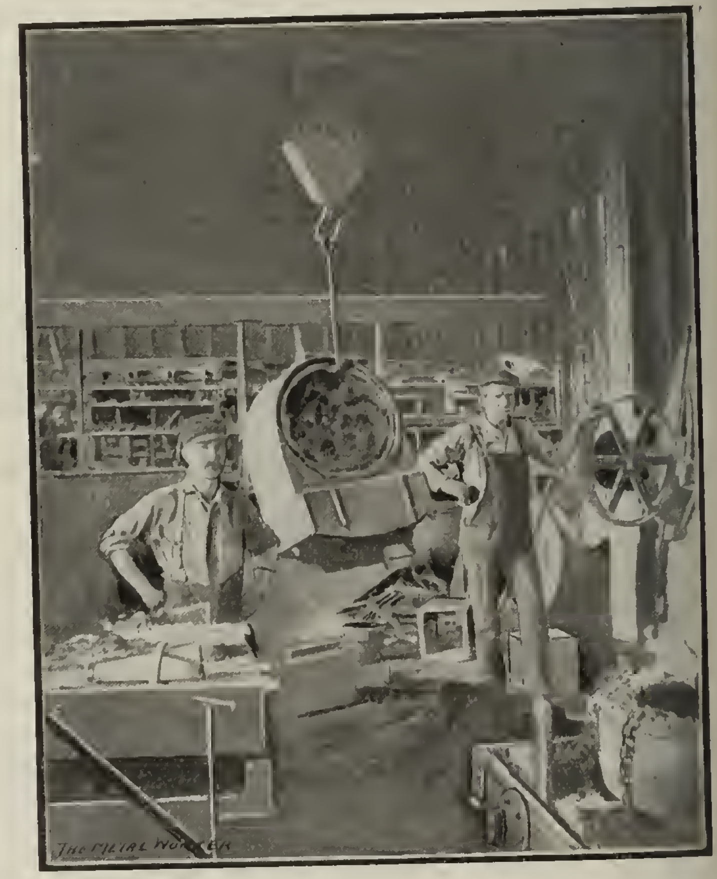


Fig. 3.—Removing the Ash Pit from the Sand.

This furnace is presented to the trade as one of the most powerful heaters manufactured. The heating surface includes not only the fire pot, body and top, but also the return flues and radiator. The three return flues connect the top with the radiator, making a long fire travel before the gases reach the smoke outlet. Steel plate was expressly selected for the body because of its quick heat transmitting quality.

The triangular grate cleans the entire bottom of the fire alike, is easy to operate, and can be removed and replaced in a few moments through the ash pit door. The furnace is fitted with feed doors of a size suitable for the use of large chunks of coal or wood. It is designed to burn either hard or soft coal, coke or wood. A special hot blast attachment has been invented and is applied to this furnace, which is used for soft coal principally. This attachment takes the air in through the feed door, passes it around behind heavy cast iron sections, becoming intensely heated *en route*, to the openings in each side of the combustion chamber, whence it is discharged at the surface of the fire igniting and consuming the gases and generating heat which would otherwise be lost. This hot blast can be replaced in a few minutes if any portion of it should burn out.

The Round Oak furnace is built in 12 different sizes, which represent each a different capacity in a regular high and a low series which is adapted to low cellars. A water heater is furnished so that all sizes except the two smallest can be used as combination warm air and hot water furnaces, giving a still wider range of usefulness.

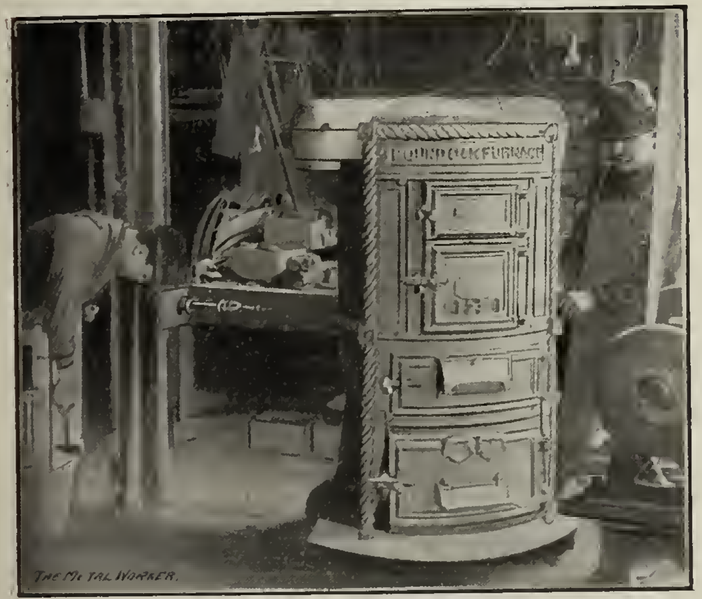


Fig. 4.—A View in the Mounting Room.

Quality has been the aim from the beginning in producing the Round Oak furnace. The manufacturers apply their experience in building and selling Round Oak stoves to their furnace trade. Their customers are assured that it is economy to buy and handle a good furnace instead of a cheap one, making quality the feature instead of the price. That this is demonstrated to be a winning point is shown by the increase in sales. Up to this time the sales of Round Oak furnaces are double those of last year. The manufacturers of the Round Oak furnace make the strong point that they teach their customers the furnace trade. Those who are not familiar with furnace work are in this way enabled to take up the sale of furnaces and thus secure an additional source of profit.

The H. Adler Company's Extension.

The H. Adler Company of Pittsburgh, manufacturers of gas and gasoline stoves and ranges, have bought a site of 4 acres of land at Carnegie, Pa., near Pittsburgh, on which they will build a modern plant for the manufacture of their goods. There will be seven buildings, which will cost, with their equipment, about $75,000. These will be a foundry, 70 x 150 feet; a mounting room, 40 x 200 feet; a finishing room, 30 x 120 feet; a store and stock room, 50 x 200 feet; an enameling room, 50 x 100 feet; a press room, 30 x 100 feet, and an engine house. The press room will be of brick and steel construction, two stories high, and will contain the offices of the company. The other buildings will be one-story structures and will be iron clad. A gas engine of 100 horse-power is to furnish power. The work of excavating will begin May 15, and the company expect to move in by December 1. The present quarters at 241 First avenue, Pittsburgh, will be retained as the main offices and for a warehouse. The H. Adler Company have been very much cramped for room for some time, having enjoyed a very large trade in their line of gas appliances, and it became absolutely necessary for the firm to greatly enlarge facilities for the manufacture of their goods.

Death of Eben W. Fiske.

The trade will regret to learn of the death of Eben Winslow Fiske, secretary of the Smith & Anthony Company, Boston, Mass., which occurred on April 29, at his residence, 46 Lyman street, Waltham, Mass. Mr. Fiske was born in Waltham on May 22, 1860. He entered the employ of the Smith & Anthony Company as a clerk in 1879, and was rapidly advanced from one position to another, until he was made secretary of the company. His entire time was devoted to the conduct of the affairs of the company, and he was held in high esteem, both by his associates in the management and by those who worked under him, down to the humblest employee. Mr. Fiske's business qualifications, integrity and kindness of heart, combined with sound judgment, earned for him the friendship and respect of all the customers and friends of the concern. The funeral was held at his late residence in Waltham on Thursday afternoon, May 1, and was attended by a large number of his friends and business associates.

Peninsular Gas Ranges.

The Peninsular Stove Company, Detroit, Mich., have issued and are distributing among the trade an eight-page folder calling attention to the Peninsular gas ranges, which is especially timely at this season of the year. The material used in the construction of this range is polished steel, which requires no blacking, the finish, it is claimed, being such that it will always retain its luster and present an attractive appearance. There is an asbestos lining around the entire body of the range, including top and bottom, which causes the heat to be retained within, thus quickening the baking process while effecting a saving in fuel. The stove is provided with four large star shaped portable burners and one simmering burner, one of them being of double capacity. There are also two powerful burners for the oven with double rows of gas jets, giving a quick and uniform heat at top and bottom of the oven at the same time. The entire oven is portable, so that all parts of it can be taken out without removing any bolts, and the oven bottom is double, so as to equalize the heat. The asbestos lined oven top is made of steel, extra well galvanized, and the oven doors are balanced so as to open easily, quietly and flush with the oven bottom, thus forming a strong shelf when open. All burners lift off, including the oven burners, thus making it easy to keep everything clean. The drip pan is made of one piece of steel with extra heavy tinned wire broiling and oven racks.

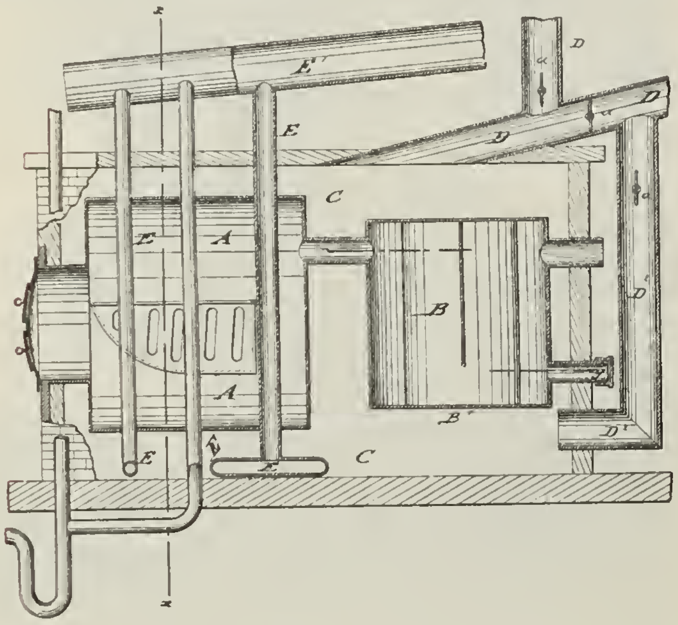
The circular also calls attention to the Active Peninsular gas range, which can be used in summer for gas, and in winter coal or 24-inch wood can be used as a fuel, as circumstances require. This combination range is made of the same materials as the gas range already described and is offered in a number of styles and sizes. The folder gives a great deal of interesting information in connection with these goods and in addition to the descriptive text there are prices, dimensions and sizes in which the ranges are offered.

The Lexington Stove Works, Lexington, W. Va., is being put in condition for the resumption of operations at an early date. The capacity of the plant will be about 30 Stoves a day, and 40 men will be employed. The company have appointed the Hardware firm of Brock & Co., Lexington, as sole distributers of their products for that city and vicinity. J. J. McGuff, an experienced Stove man, will take charge of this department of Brock & Co.'s business.

AN OLD COMBINATION HEATER AND VENTILATOR.

Evidently the discussion of the "rotary system" of hot air furnace heating is having the result sought for by the original contributor—that is, the study of what has been done in the past for the purpose of future guidance. We have been favored by W. R. Macdonald of Pittsburgh, Pa., with the following letter, together with a copy of a patent granted to him in 1878, a portion of which we reproduce with a cut showing the combined heater and ventilator patented by Mr. Macdonald. The letter is as follows:

"For the consideration of the furnacemen now in travail with the 'rotary system,' I send herewith a copy of an expired patent for a combined heater and ventilator. It is, of course, old fashioned, but where is the modern heater for the same work? The salient points are ventilating flues, or ducts, that are connected with the apartments, seat vents, &c., to be ventilated, for collecting the foul air through the heater, by means of small flues into a large collecting and discharge foul air flue above the heater, as shown. It will be observed that it differs from the 'rotary system,' inasmuch as the air that is taken down from the rooms is not returned to the rooms to be used over again, but is discharged into an upcast flue. This being a gift horse, I hope the critics will receive him kindly as an antique."



An Old Combination Heater and Ventilator.

The patent papers show the cut presented herewith and state that the invention has for its object the furnishing of a combined heating and ventilating apparatus that may be used either wholly as a heater, or as a heater and ventilator, or for summer use as a ventilator alone, the apparatus supplying heat in the customary manner, but throwing off the vitiated foul air from apartments, closets, soil pipes, &c., and conducting the foul air away and supplying in its place pure air. The main heater A consists of an oval cylinder placed horizontally, inclosing the fire chamber, with an outlet for the products of combustion to pass into an annular drum in the rear, thus affording considerable surface for heating the air. The hot air for warming purposes is gathered in the large hot air flue D, from which branches are taken to the various apartments to be heated. A branch from this heating flue is carried down from the top of the heater to the bottom of the heating chamber, and both pipes are fitted with tight dampers, so that the effect of the modern mixing chamber can be secured, or, by closing the damper in the heating flue and opening the damper in the return flue D^2, air can be exhausted from the rooms connected with the heating flue and these rooms ventilated. The main exhaust ventilating feature consists of bringing small pipes back from the various rooms heated to the bottom of the air heating chamber, and passing these small pipes up through the chamber and connecting them with one large exhaust ventilating flue E^1, this main flue to be carried to some convenient point for discharge and so protected that back draft will not interfere with its operation.

An apparatus of this type was exhibited at the Pittsburgh Exposition in 1882 and received first premium for the best ventilating attachment to a heating apparatus awarded by the Pennsylvania State Agricultural Society. Mr. Macdonald states that a number of such apparatus were installed in St. Louis and gave such satisfaction that testimonial letters were furnished, but that as the average layman of that date did not appreciate ventilation the business was all the way up hill and the effort to sell the apparatus was discontinued.

THE "ROTARY SYSTEM" OF AIR MOVEMENT.

BY O. K.

"Iowa" seems to have stirred up some thought on the heating question. I notice the contributors to *The Metal Worker* have not read "Iowa's" article in the issue of March 8 very carefully. Your Minneapolis correspondent has lost his breath in driving at things "Iowa" never dreamed of in his article as I understand it. The writer (so he says in his article) has used stove and steam heat in his time. Where did he get his fresh air with these systems? He didn't have any, according to his theory. He thinks fresh air can only get into a house through a wooden box or a pipe. He thinks five people "destroy large quantities of oxygen."

I had a house facing west several years ago, with a big brass key for the front door. The keyhole in cold weather let in more cold air than five persons could use. The fact that under the old style furnace system the same provision was made for fresh air for 25 persons as for one shows the humbug of the thing. It has been just as "Iowa" says. The cold air box was not for ventilation, but because the furnacemen did not know of any other way to get their heat into the house. This "rotary air movement," I believe, has come to stay. It knocks out the old nonsense and people see it. Hence its rapid adoption in Iowa. This "rotary air movement" does not interfere with any other method of ventilation.

Again, "Minnesota" is afraid of that 6 gallons of water. He doesn't seem to know that furnacemen and all other heating men have been hunting for years for a practical method for giving moisture to the air of our houses and have failed. "Iowa" has given us a practical method. The amount can be controlled and regulated to any degree. If a man don't like 6 gallons he can have less, but 6 gallons of water used in 24 hours in an ordinary house in cold weather would only give the air a very pleasant condition—about like the air of a nice June day. "Minnesota" going over a house, sprinkling a gallon of water in each room, would find in the course of an hour or so that the hungry dry air of his dry air furnace had licked up all this water, and that the air had been greatly improved in quality. That would only be his bungling way of getting at what "Iowa" gets at automatically in the best way imaginable, and only gives the air what it requires.

When Dr. Williston, medical adviser of the State Board of Health of Kansas, pronounced "Iowa's" method of softening the air as "having solved the problem of sanitary heating," "Minnesota" and all other heating men should give heed. If "Minnesota" will turn to the March 8 number of *The Metal Worker* and read over again "Iowa's" article until he understands it, he will laugh himself at the mess of blunders he has made in the last 30 lines of his article.

What most of us are after is the truth, and to get rid of any errors in our common methods of heating. "Iowa" has given us a whole lot of ideas to think of. He has hit our old ideas some hard knocks. If we undertake to kick back we need to be careful that our force is not spent in defending ignorance and wrong methods.

It is reported that a plant for the manufacture of Gas Stoves will be erected at Kankakee, Ill.

ODD PLATES.

The H. Adler Company, 241 First avenue, Pittsburgh, Pa., are sending out a neat blotter calling attention to their Acme Gas Ranges, Ovens, Cookers and Hot Plates. The company are prepared to send their catalogue No. 35 covering this line of goods to any who are interested, on receipt of application.

The Globe Stove & Range Company, Kokomo, Ind., were serious sufferers by a fire which broke out in their works on the 13th ult. The engine room, wood pattern shop and range mounting room were destroyed. The loss approximates $24,000, which is fully covered by insurance. The company began to rebuild immediately after the fire and expect to have the plant in good running condition very speedily. Their warehouse, which was full of manufactured goods, was untouched, consequently the company are in position to give all orders prompt attention.

The Mosher Heating Company of West Troy, N. Y., are sending to the trade a large mailing card showing a broken view of Mosher's K-loric Generator Warm Fresh Air Furnace. The construction provides a large heating surface and an indirect draft, and the principal feature is a hollow bulb hanging in the center of the combustion chamber, the circulation of air through which is claimed to add substantially to the heating capacity.

The Meyer Furnace Company, Peoria, Ill., are placing upon the market this season a new line of Acorn Wood Furnaces, in two sizes, and the manufacturers claim special merits and selling advantages for these goods. The well-known Weir Furnaces continue in popular favor, and in order to properly handle the increasing business the company have doubled the size of their plant this spring, adding new machinery and other equipment. The Handy Furnace Pipe, manufactured by F. Meyer & Brother Company, is still another product of this plant which is in large and increasing demand. The trade are invited to look into the merits of these products.

The Co-operative Stove Company, Bloomington, Ill., are calling attention to the new designs and features of their Stoves and Ranges offered this season. They say the outlook for trade is very favorable. They have recently added a new equipment of machinery, in order to enable them to better care for the enlarging demand.

The Western Stove Works, Peoria, Ill., have added to their line for this season a new Steel Cook, for which they claim special merit in the construction and attractiveness of design. Their well-known line of Pleasant Home Stoves and Ranges continue to make good in the home the full significance of their title. In order to meet the growing demand for these goods a large addition to the company's present factory has been built and equipped with new machinery.

William Highton & Sons, manufacturers of Hot Air Registers, Ventilators and Borders, with factory at Nashua, N. H., have recently removed their Boston office to 26 Union street, which is in the heart of the Stove district. The Boston store is in charge of Benjamin G. Lamont and occupies two floors, 30 x 75 feet. A large and varied stock of goods is carried there, sufficient to meet all the demands of the trade, and samples of the company's entire line are attractively displayed. These include many styles and finishes. They have recently added a number of new finishes, including oxidized copper, antique, frosted silver, oxidized silver, chocolate, old copper, nickeled and copper plated and aluminum.

The Eclipse Gas Stove Company, Rockford, Ill., of whom George B. Roper is the president and manager, have issued an illustrated catalogue for 1902 descriptive of their Eclipse Gas Stoves, Water Heaters, Broilers, Ovens and special appliances. The catalogue is of 48 pages, tastefully arranged and well printed, and illustrated with half-tone engravings of the company's varied line of goods. It opens with a complete description of the Eclipse Gas Stoves and details regarding their especially meritorious features, including the auxiliary oven, upright broiler and water heater.

The Portsmouth Stove & Range Company, Portsmouth, Ohio, manufacturers of the Model Steel Ranges, Queen Stoves and Hollow Ware, send out, under date of April 23, a large postal card advising the trade that the increased cost of manufacturing their product has compelled them to withdraw prices on their goods. The company will quote present prices on application.

In bringing to the attention of the trade the Quick Meal Steel Ranges for this season the Ringen Stove Company division of the American Stove Company, St. Louis, Mo., direct special attention to new features of construction, which will be found of great advantage. It is announced that the main points of improvement in these goods will be in the matter of a new shelf and closet, which will be something entirely novel, and, it is said by the manufacturers, will prove a revelation to the dealers.

W. G. McPherson of Portland, Ore., who is in the East in the interest of his large heating and ventilating business, was a visitor at *The Metal Worker* office this week.

F. E. Myers & Bro.

The marked growth of the business of F. E. Myers & Bro., Ashland, Ohio, manufacturers of the Myers pumps, hay tools, Stayon door hangers, &c., has compelled this firm within the last three years to add to their already large plant two three-story additions, 50 x 150 feet. A new power plant was also added during the last year, so that the plant is now driven entirely by electricity. Their office facilities had also become very inadequate. Recent changes have lately transformed the entire lower floor of one of the main wings, 50 x 150 feet, into splendidly arranged and equipped offices. The offices are fitted up in luxurious style and provided with all the modern conveniences. Separate communicating offices for the use of the heads of the firm and managers of departments give privacy and at the same time render communication between departments easy. All the offices have an abundance of light, are well ventilated and everything possible has been done for the comfort of the large number of clerks employed.

Special F Victor Sifter.

National Mfg. Company, Worcester, Mass., New York office 103 Chambers street, are making the Special F Victor rotary flour sifter, here shown. It is about double the weight of the ordinary pattern, has a beveled tin agitator, is nickeled and polished, and has a mahogany finished wood handle. This quality of sifter has been put out in response to a demand for a better grade of thoroughly serviceable goods than was afforded by the regular line.

Special F Victor Rotary Sifter.

The Michigan Barrel Company, Grand Rapids, Mich., are sending out a new catalogue of the Yukon, Economic and Chilkoot Refrigerators. The Yukon has 3 inches of insulation and eight walls. The Economic is solid ash, with both zinc lined and white enamel provision chambers and eight walls. The Chilkoot Refrigerators are offered to meet the demand for a moderate priced article, and are made of hard wood with golden oak finish and insulated with charcoal sheathing.

THE NEW YORK STATE ASSOCIATION OF RETAIL HARDWARE DEALERS.

The meeting which was held in the Yates Hotel, Syracuse, N. Y., on Monday and Tuesday of this week for the purpose of organizing an association of retail hardware dealers in New York State was in all respects successful. The attendance was exceptionally large and the enthusiasm shown promises well for the success of the association. The meeting was called to order on Monday afternoon by John R. Taylor of Little Falls, who nominated as temporary chairman O. D. Towne of Saratoga Springs, who made a brief address outlining the object of the meeting. The following committees were appointed:

Constitution and By-Laws: John T. Sage, Irving Van Vorls, W. D. Hallowell.
Nominations: F. W. Gardner, Thomas Maloney, Geo. B. Allen.
Press: J. B. Foley, Allen S. Matthews, Mr. Goodnoe.

The chairman then introduced Secretary M. L. Corey of the National Retail Hardware Dealers' Association, who made a very interesting and effective address, referring to the lines on which the association could most satisfactorily do its work. Addresses were also made by John R. Taylor, A. S. Matthews, H. D. Howell, J. H. Callahan and others.

The session on Tuesday morning was entirely devoted to the consideration of the constitution and by-laws, and the report of the Committee on Constitution and By-Laws was adopted. It was decided that the title of the association should be the New York State Association of Hardware Dealers. The resolutions adopted were as follows:

Whereas, Some manufacturers and wholesale dealers in general Hardware, Stoves, Tinware and kindred lines persist in selling their lines through prejudicial channels to our injury and detriment, placing us toward our customers in the light of extortioners, causing endless trouble, and

Whereas, The system of protecting us from this wrong is ineffective, it is absolutely necessary to perfect such a system by united action, which will remove these evils from which we have suffered for years. Therefore, be it

Resolved, That the members of this association confine the purchase of Hardware, Stoves, Tinware and kindred lines, as far as practicable, to manufacturers and wholesale dealers who sell goods to firms that are regularly engaged in the retail Hardware business, as defined in these resolutions.

Resolved, That it is the sense of this association that the interpretation of the term "retail Hardware dealer," as set forth in the above resolution, to entitle him to purchase Hardware, Tinware and kindred lines, be construed to mean any person having an established place of business and carrying a line of Hardware, Stoves, Tinware and such goods as are usually kept in a first-class Hardware store; excepting in places where there are no regular Hardware stores. General stores who do not use the line in a way that demoralizes the trade, and any other store not objectionable to the regular dealers in such territory, shall be construed as legitimate.

Resolved, That it is not the intention of the above resolutions to prevent the interchange of goods mentioned between manufacturers and wholesale dealers in such goods, or for export trade, and that the further interpretation of these resolutions is hereby vested in the Executive Committee, with power. The following are exempt from these resolutions: The United States Government, railroads and such manufacturing industries and companies as the Executive Committee may approve, for such goods as are necessary for their respective lines of business.

Resolved, That any manufacturer or jobber in Hardware, Stoves, Tinware or kindred goods furnishing net prices or any discount from list prices, contrary to the foregoing resolutions, either by themselves, employees or agents, shall be considered as disapproving the above resolutions.

Resolved, That this association shall, as far as lies in its power, keep a record of all goods sold, and by whom sold, through prejudicial channels, and of all other violations of these resolutions.

Resolved, That every member of this association is constituted a committee of one, and is expected to report to the proper officers any violation of these resolutions.

Resolved, That it is the sense of this association that bids direct to consumers or contractors by jobbers or manufacturers, upon any kind of finishing or rough Hardware entering into the construction of buildings, are injurious to the retail trade, and that all such bids should be made by or through a regular Hardware dealer.

Resolved, That all meetings of the State association should be closed meetings, and that the published reports of the proceedings of same should be under the supervision of a press committee.

Resolved, That these measures are just and necessary for our welfare, and it is expected that their rigid enforcement will be observed.

Resolved, That this convention indorses the above, and urges its officers to use their best efforts to bring about the further formation of State association so as to insure a greater national association, with the end in view that a uniform system of protection for the trade will prevail throughout the country.

The report of the Nominating Committee received the unanimous approval of the convention. The result was the election of the following officers:

President, H. D. Hull, Troy.
First Vice-President, W. D. Hallowell, Penn Yan.
Second Vice-President, Thomas Maloney, Elmira.
Secretary, John R. Taylor, Little Falls.
Treasurer, J. B. Foley, Syracuse.
Directors, One Year: Chas. Sherwood, White Plains; J. H. Callahan, Binghamton; A. F. Miller, Olean.
Two Years: G. B. Allen, Buffalo; Louis Ernst, Rochester; H. M. Countryman, Potsdam.
Three Years: O. D. Towne, Saratoga Springs; Geo. W. Rockwell, Horseheads; Allen S. Matthews, Fort Covington.

Bradley Detachable Shelf.

Atlas Mfg. Company, New Haven, Conn., have just put on the market the Bradley detachable shelf, as here illustrated in detail. Fig. 1 shows one of the two brackets necessary to sustain the shelf. Fig. 2 illustrates the shelf in the act of being forced into place. Fig. 3 represents the shelf and bracket complete as in use. No screws, nails or tools, it will be observed, are required to put the shelf in position. The buyer is able to buy the article complete (board and bracket), ready to put up. This device is made in two styles of shelf and two lengths of each; one has japanned brackets and whitewood board, the other being furnished with nickel plated brackets and oak board. The sizes of each are 4½ x 17 inches and 4½ x 21 inches. The shelves are 5-16 inch thick, and will hold all the weight that is likely to be put on them. They are put up one dozen in a paper box and 12 dozen in a crate.

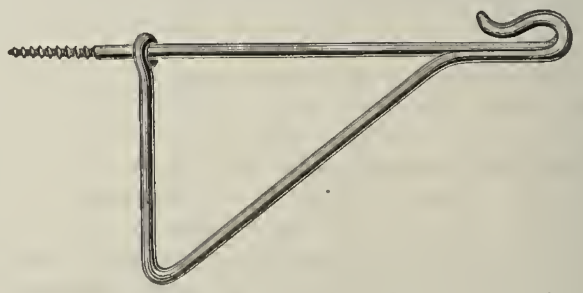


Fig. 1.—Bracket for Bradley's Detachable Shelf.

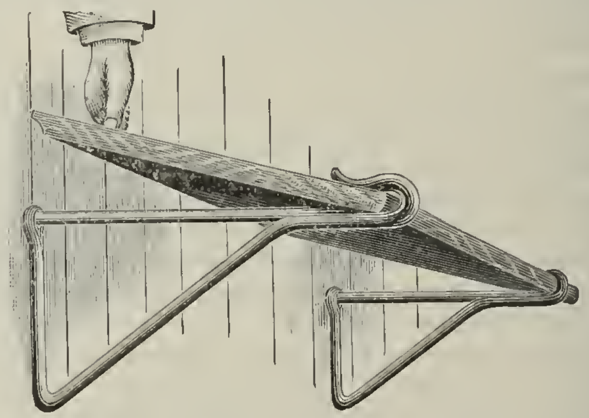


Fig. 2.—Method of Erecting Shelf.

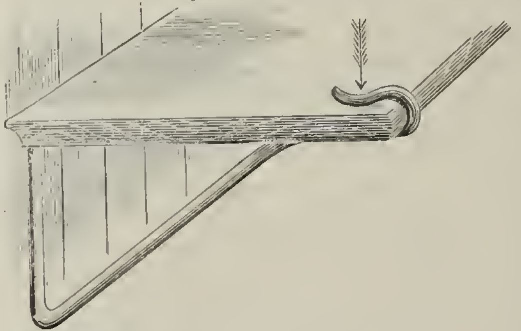


Fig. 3.—Section of Shelf Ready for Use.

Corrugated Sprinklers and Coal Hods.

The National Enameling & Stamping Company are offering a new line sprinklers and coal hods, which are made at their factory at Baltimore, Md. In Fig. 1 of the illustrations herewith is shown the improved corrugated sprinkler made with stamped, seamless breast and zinc rose. These sprinklers are constructed of heavy sheet steel, galvanized after being put together, and greatly strengthened by corrugation. The stamped bent spouts are double seamed, and the body is supported by a heavy breast securely riveted. The strong top and back handles are wired, clamped and riveted in such a manner as to insure durability. These sprinklers are made in 4, 6, 8, 10, 12 and 16 quart capacity. The company also manufacture a line of plain, galvanized sprinklers of similar size and capacity, but without corrugations.

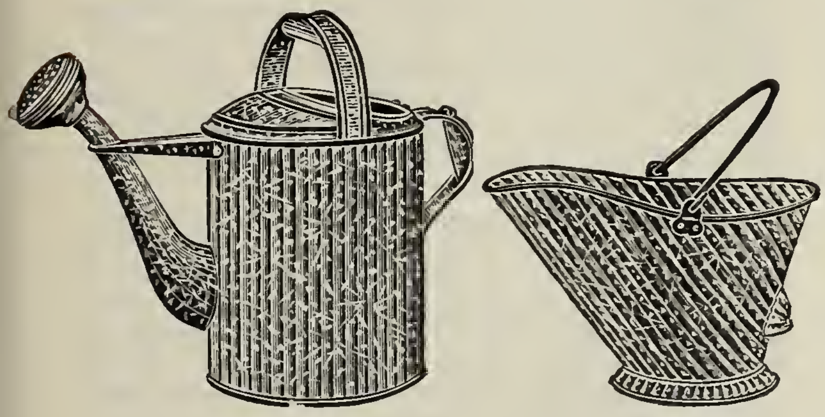


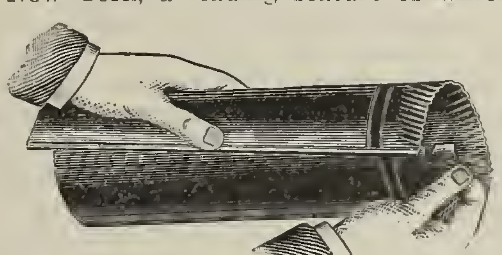
Fig. 1.—Corrugated Sprinkler. *Fig. 2.—Corrugated Coal Hod.*

National Sprinklers and Coal Hods.

What is claimed to be a new departure in coal hods is shown in Fig. 2. The novel feature of this article is the corrugated body, bottom and foot, which the manufacturers claim makes the article much stronger and prevents it from being easily dented. A special advantage of these coal hods is in pouring into the stove, as the coal passes out of the corrugated hods more freely and into a smaller opening without spilling than from plain hods. They are made from the best quality of sheet steel, with a double seamed bottom, and are 15, 16, 17 and 18 inches diameter. The company also make a line of corrugated hods provided with a japanned funnel.

N. E. & S. Company's Patent Stove Pipe.

We give below illustrations of the stove pipe manufactured by the National Enameling & Stamping Company of New York, a leading feature of which is the patent lock. In Fig. 1 is shown the manner of fastening the joint, while Fig. 2 represents the stove pipe as it appears with the finished joint. It will be noticed that the device for holding the seam together is very simple and at the same time very effective. The company state that they have a large demand for their stove pipe and are prepared to furnish all information on these goods, together with prices, on application.



N. E. & S. Company's Stove Pipe.—Fig. 1.—Manner of Fastening Joint.

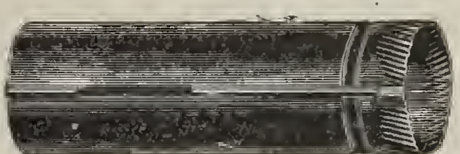
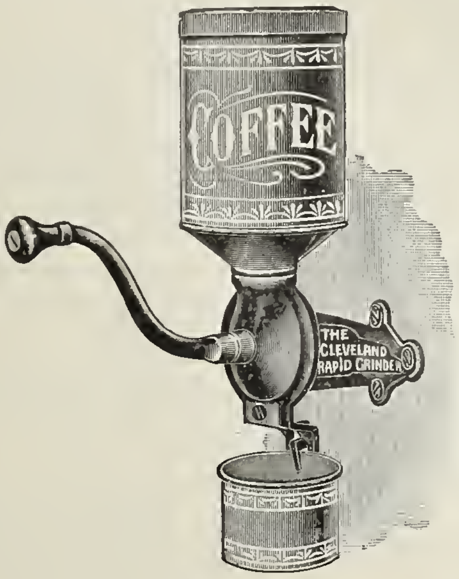


Fig. 2.—Finished Joint.

The Cleveland Rapid Grinder.

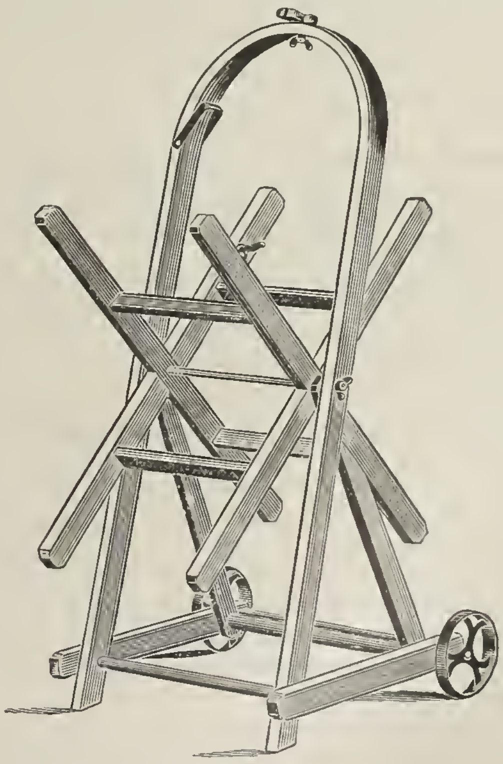
The Harris Mfg. Company, Cleveland, Ohio, are offering the coffee and spice mill shown herewith. The canister, which holds a pound of coffee, is screwed over the neck formed by the casting, and can in no way become detached, it is explained, without loosening the screw at the lower part of the mill. The cup below can be detached easily, it is shown, by raising the slide at the back without spilling the contents, and when attached will not shake loose. The grinders are so constructed that all spices as well as coffee can be ground to any size required, by turning the wing nut at the back of the mill. The manufacturers state that the mill is well constructed, durable and efficient in operation.



The Cleveland Rapid Grinder.

Improved Hose Reel.

J. A. Dubuar Mfg. Company, Northville, Mich., for whom Hendricks & Class, 150 Nassau street, New York, are direct representatives, have recently begun the manufacture of an improved form of bow top garden hose reel, as illustrated. The particular feature of this reel, as now made, is that it is much stiffer and more rigid, there being four legs instead of two as heretofore. It is made of hard wood, is strong and substantial, and can be knocked down for shipment in bundles of one-half dozen each.



Improved Bow Top Garden Hose Reel.

Stove and Hardware Dealers.

Sidney Shepard & Co., Buffalo, N. Y., are offering a stand and a complete set of their Kitchen Specialties free of charge to customers buying the firm's assortment of Quick Selling Kitchen Specialties. The design of the display stand and samples is to increase the sales of this class of goods.

S. L. Duff has admitted a partner in his Hardware, Stove and Farm Implement business in Quenemo, Kan., and the style is now Duff & Graham.

C. L. Fewell has admitted a partner in his Hardware and Stove business in Corsicana, Texas, and the style is now Fewell & Jester. They discount all their bills.

Wilson & Nagle are successors to Leech & Wilson in the Hardware, Stove and Tin business in Mechanicsville, Iowa. The new firm are putting in additional shelving and have also increased the storage room.

Several months since B. B. Myers bought the stock of Ott Bros., Bucyrus, Ohio, the business being continued under the style of Bucyrus Cash Hardware Store. Mr. Myers also conducts a cash Hardware store at Nevada, Ohio, E. E. Fraise being the manager at that point. The line of goods carried at both stores embraces Hardware, Stoves, Tinware, Cutlery, &c.

W. B. Barstow, Manilla, Iowa, wholesale and retail dealer in Hardware, Stoves, Agricultural Implements, Sporting Goods, Buggies, &c., has been succeeded by Barstow & Sanders, who have just moved into a $13,000 brick building, giving them 8000 feet of floor space, and attractively and conveniently fitted up.

Western Hardware Company, Spokane, Wash., have been succeeded by Goodsell-Wilson Hardware Company, who will continue the wholesale and retail business in Shelf and Heavy Hardware, Stoves, Tinware, Agricultural Implements, Sporting Goods, &c.

The New York branch of Matthews & Willard Mfg. Company, Waterbury, Conn., manufacturers of various kinds of Lamps for household use, bicycles, automobiles, &c., also Chafing Dishes, has been removed from 40 Murray street to Fourth and Wooster streets.

Simmons Hardware & Mill Supply Company, Beaumont, Texas, have changed their name to Simmons Hardware Company and have increased their capital stock from $10,000 to $20,000. Arville Ewing has been elected treasurer and has assumed the management of the concern. The company will value catalogues, quotations, &c., relating to general Hardware, Sporting Goods, House Furnishing Goods, &c.

R. E. Zimmerman has succeeded Jos. H. Barker in the Hardware and Stove business in Beaver Falls, Pa., and requests manufacturers to send catalogues and other printed matter relating to general Hardware, Tinware, Paints and Oils, Stoves, Glass, House Furnishing Goods, Lime, Cement and Sewer Pipe.

E. C. Kurtz and R. J. Maple have embarked in the Hardware business at Nottingham, Ohio, under the style of Nottingham Hardware Company. The store of the new firm has been thoroughly fitted up for the business and a complete stock of Hardware, Stoves, &c., will be carried. They also have a department devoted to plumbing and tinning. The firm would be pleased to receive catalogues, price-lists, &c., pertaining to the above lines.

Watt Harley Holmes Company, Fitzgerald, Ga., will open a new store at Cordele, Ga., where they will carry Shelf and Heavy Hardware, Mill Supplies, Tinware, Sporting Goods, Crockery, &c. They request catalogues and price-lists relating to these lines. D. Holmes, secretary and treasurer of the company, will manage the new store.

W. M. Dailey & Son, Kennedy, N. Y., have removed their general Hardware and Stove stock to Falconer.

Bond & Bours, Jacksonville, Fla., who embarked in the retail Hardware business three years ago and have met with a good deal of success, have lately moved to new and finer quarters, consisting of two three-story buildings, one 24 x 114 feet and the other 30 x 100 feet, with new fixtures throughout. With their removal to the new quarters the firm have opened up a wholesale department and will soon send out salesmen to work Florida and parts of Georgia. Their line embraces Shelf and Heavy Hardware, Stoves, Tinware, Agricultural Implements and Sporting Goods.

G. E. Clark, Eaton, N. Y., has disposed of his Hardware, Stove and Farm Implement business to A. H. Dresser, formerly of Lebanon. Mr. Dresser will add to the above lines the sale of Adamant, Plaster, Cement, &c.

Edwin E. Rall has succeeded W. P. Dautel in the Shelf Hardware, Stove and Plumbing business at Glasgow, Mo.

For the purpose of securing additional capital to carry on their business, which had increased beyond their ability to handle it, Bynum & Butcher, Ensley, Ala., have incorporated under the style of Bynum & Butcher, Incorporated. The company do a wholesale and retail business in Shelf and Heavy Hardware, Stoves and Tinware, Agricultural Implements and Sporting Goods.

Baily & Rusk, Mt. Sterling, Ill., have decided to add a new and complete stock of Hardware to their former business as dealers in House Furnishing Goods, Stoves and Furniture. Leo Clark has purchased a third interest in the concern, and the style has been changed to Baily, Rusk & Clark. They are putting in new shelving in the old establishment, and are also building an addition, 40 x 50 feet, two stories high.

J. E. Ferguson Hardware Company, Kingman, Kan., have been incorporated with a capital of $20,000, succeeding Ferguson Bros. The stockholders of the new company are all members or employees of the old firm. The company will handle Shelf and Heavy Hardware, Stoves, Tinware, Agricultural Implements, Sporting Goods, &c. J. E. Ferguson will manage the business.

G. W. Storey has succeeded A. H. Owens in the Hardware, Stove and Tinware business in Hedrick, Iowa.

A. F. Bergling has disposed of his Hardware business in Albert City, Iowa, to Lodin & Danielson.

John Buschers & Co. are successors to H. J. Oltrogge, dealers in Hardware, Stoves, Plumbing Supplies, &c., Waterloo, Iowa.

G. W. Gurley & Sons, Purdy, Mo., have been succeeded in the wholesale and retail Hardware, Stove, Agricultural Implement and Sporting Goods business by Gurley Bros.

Thomas Hardware Company, Bedford City, Va., have lately taken possession of their fine new building, which is owned by members of the firm. There are two entrances to the store, one on Main street, leading into the Stove and Tinware department, and the other on Bridge street, where General Hardware is carried.

P. C. Sheer has recently commenced business in Dover, Mo., handling Shelf Hardware, Stoves, Tinware, Agricultural Implements, Buggies, &c.

Jeffries & Son, Hardware and Stove merchants, David City, Iowa, have been succeeded by I. N. Jeffries.

Evans & Dean have bought out G. W. Songer, dealer in Hardware, Stoves, Farm Implements, &c., Hoopeston, Ill.

The National Enameling & Stamping Company of New York are calling special attention to their complete line of Dairy Supplies. The company have so thoroughly studied the wants of the farmer and dairy trade that they are in a position to furnish anything that is demanded in this line. They also call attention to their fall goods, which include Coal Hods, Stove Pipe, Shovels, Dripping Pans, &c. The Stove Pipe and Dripping Pans manufactured by the company are made from a smooth and even colored steel and have a very fine appearance. The company are prepared to furnish catalogues covering their extensive line of goods to any one interested, upon application to any of their branch offices in New York, Chicago, St. Louis, Baltimore and Milwaukee.

The Dowagiac Canning Company of Dowagiac, Mich., are giving up their canning business and will embark in the manufacture of Kitchen Utensils.

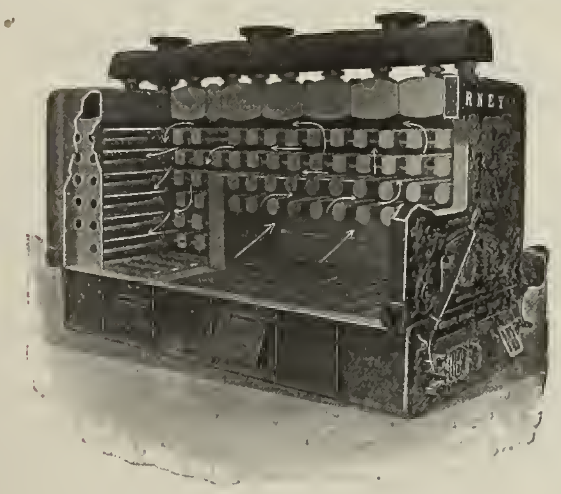
Leroy Miller has opened a retail Hardware, Stove and Tinware store at Queen City, Mo.

Water Closet Combinations.

The Great Western Pottery Company, with plants at Kokomo, Ind., and Tiffin, Ohio, have recently issued their catalogue No. 4 devoted to modern water closet combinations and to plumbers' earthen ware, plain and decorated, and vitreous china specialties of every description. The catalogue is of 64 pages, of highly finished paper, and is well printed. It opens with a variety of low down tank water closets of the latest construction and equipped with earthen ware tank. The closets are of the siphon jet and siphon action and wash down types. They are of the latest shapes and of most pleasing designs, both plain and embossed, some being decorated with gold. These are followed by a variety of high flush tank closets, the tanks being also made of earthen ware and ornamented so as to be in keeping with the most handsomely equipped bathroom. The latter portion of the catalogue is devoted to general and sectional views of the various types of closets made by the company, together with plan views, in which the important dimensions are given for the convenience of the plumbing trade. The sectional views enable a correct idea to be formed of the connections of the various types of siphon jet, siphonic action, wash down and wash out closets. One section of the catalogue is devoted to different types of urinals, urinal hoppers and a variety of wash basins, which are shown in round, oval, oblong and rectangular form, plain and embossed and decorated.

The 1200 Series Bright Idea Boilers.

The Bright Idea steam and hot water heaters put on the market by the Gurney Heater Mfg. Company of Boston, Mass., with New York office at 111 Fifth avenue, have become well known to the trade in the smaller sizes. Particular attention is now being invited by the manufacturers to the 1200 Series, a broken view of which is presented herewith. This boiler is of the vertical sectional type, and increased surface for absorbing the heat from the fire and from the gases and imparting it to the water and steam is secured by the connection with the vertical section of especially constructed castings, as shown in the engraving. The result of this peculiar construction, which is known as the Bright Idea, has been to develop a high efficiency with an equally satisfactory economy in the use of fuel. This type of boiler is made in several series, the 600 Series, the 700, 1100 and 1200 Series, the lower series having a grate 26 inches wide, the next series 36 inches wide, the next 40 and the latest production—the 1200—having grates 48 inches wide and varying from 42 inches to 84 inches in length.



The 1200 *Series Bright Idea Boilers.*

These boilers are well adapted to the varying requirements of the steam fitter, having a range of capacity from 900 square feet of direct steam radiation in the smallest size of the 600 Series to 7000 feet of direct steam radiation in the largest size of the 1200 Series, and from 1500 to 11,500 square feet of hot water radiation. The products of combustion, being played over the large fire tube surface, pass over the bridge wall into a large combustion chamber at the rear, in which there is also a large amount of fire tube surface. From this chamber the gases pass to the final smoke outlet at the bottom. At the rear bridge wall section there is a draw out door, for the purpose of dumping into the ash pit any accumulation of ashes or soot that may collect back of the bridge wall or in the combustion chambers. It is pointed out that the character of the surface in this arrangement enables soot and ashes to be readily brushed off, thus avoiding the reducing of the heating power of the boiler from its nonconducting effect.

It is also pointed out that in the largest size of these boilers a very low water line is carried, enabling the steam fitter to secure its installation in low cellars and to give a good pitch to his mains. The total hight of the largest size of heaters is 83 inches, while the water line is but 56 inches. The company issue a catalogue giving full details not only of the Bright Idea line of boilers, but also of their Doric and 400 Series, which are of the round horizontal sectional type, as well as the extensive line of radiation which they manufacture.

The Webster City Steel Radiator Company.

A meeting of the stockholders of the Webster City Hot Water Heating Company was recently held in Webster City, Iowa, for the purpose of changing their articles of incorporation. Resolutions were adopted changing the name to the Webster City Steel Radiator Company and the capital stock was increased to $75,000. The following officers were elected:

President, W. J. Zitterell.

Vice-President, A. N. Boeye.

Secretary and Treasurer, James Kephart.

Directors: The officers and W. N. Merrill, L. A. McMurray, J. W. Young and A. F. Hoffmann.

The company will manufacture steel radiators and heating apparatus, also boilers, engines, feed steamers and other similar articles, as well as conducting a general manufacturing business, including repair work.

The New York Trade School Roll of Honor.

Through an error in the list furnished us giving the "roll of honor" of the graduates at the New York Trade School for the season just closed, the name of W. D. Grant of Kane, Pa., was omitted. We have received from Mr. Grant a copy of a letter from the New York Trade School, stating that in his final examination he reached the 100 mark in all branches of his work, and therefore was entitled to a place on the "roll of honor."

Protection of Metallic Tubes in France.

United States Consul Thornwell Haynes of Rouen, France, reports that M. Bergier, a Frenchman, has just discovered a composition for protecting metallic tubes against the action of liquids. The composition, says the consul, consists of the following:

	Kilograms.	Pounds.
Dry sand	100	= 220.4
Potash or soda	83	= 182.9
Nitrate of potash	2	= 4.4
Minium	15	= 33
Pulverized marble	5	= 11
Dichromate	0.10	= 0.22
Red oxide of copper	0.05	= 0.11
Regulus of antimony	0.05	= 0.11

This is applied to the interior of the tube as follows: The vitreous substance is first blown into cylindrical form and is then introduced into the tube, which has been brought to a white heat, the blowing being continued until the composition adheres to the metal. The consul adds that the composition is claimed to have an expansion and contraction equal to that of the metal which it protects.

The F. A. Wendell Heating & Plumbing Company of Salem, Mass., have been awarded the contract for plumbing what is said to be one of the finest stables in the world, which is being built at Egypt by J. W. Lawson. The company also have the contract for plumbing and gas fitting the new Swift Building.

Practical Lead Work.

BY D. F. N.

Old plumbers will recognize as familiar and young plumbers will take interest in some of the hand made grease and fixture traps, which were formerly quite frequently formed up and put together for use in country residences by the plumber, or worker in lead, as defined by Webster. Several of these traps are shown in the accompanying illustrations. The trap in Fig. 1 is made from a piece of 8-pound sheet lead, or a piece of 8-inch lead pipe beaten up to a smaller opening at the top to take a 4-inch screw plug. The bottom is made of a flat piece of lead 2 inches larger in diameter and secured by means of a wiped flange joint. The 4-inch screw plug is also wiped on. Two pieces of 2-inch lead pipe for inlet and outlet are filled with sand and then bent to the required curve before they are wiped on to the body of the trap. This was formerly considered a very good trap; but it needs cleaning and should be taken care of when full.

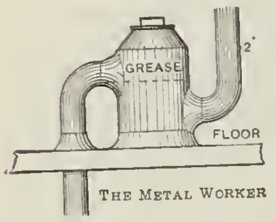


Fig. 1.—A Drum Trap.

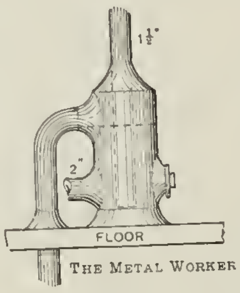


Fig. 2.—Bottle Trap.

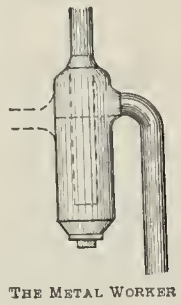


Fig. 3.—Bottle Trap.

Practical Lead Work.

A bottle trap adapted for use in connection with several washtubs is shown in Fig. 2, the top inlet to the trap receiving the discharge from the first tub with 1½ or 2 inch branches up to the different tubs forming the set. This trap is provided with a 2-inch or 3-inch main waste outlet, according to the size and number of tubs or fixtures connected with it.

The bottle trap, shown in Fig. 3, with vertical or horizontal outlet, is regarded by some as being somewhat dangerous. The disadvantage is due to the corrosive effect of the sewer air on the inlet pipe at the water line in the trap, which is sometimes eaten away, killing its efficiency as a trap by allowing sewer air to enter the building. These traps were made from a piece of 2-inch pipe 10 inches long with a 1½-inch inlet and outlet; or, when used in connection with larger fixtures, a piece of 3-inch pipe 11 inches long with 2-inch inlet and outlet. The larger trap is adapted for use where a sink and a couple of tubs are arranged close together, the smaller sizes being used for wash basins. This trap is also made as an angle trap with an outlet made as shown by the dotted lines.

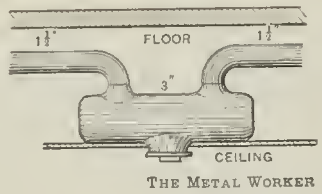


Fig. 4.—A Running Bath Trap.

A running trap for use under a bathtub is given in Fig. 4, the body being made of sheet lead with a 2-inch or 3-inch nickel plated trap screw in it, set so that the screw would come even with the finished ceiling in the room below the bathroom. If for any reason it is necessary to have the trap further above the plaster, a short piece of pipe of the size of the trap screw is used between the body of the trap and the trap screw, so as to bring it down flush with the ceiling. This enables any obstruction in the trap to be removed from below; but, owing to the arrangement of the inlet pipe, which projects nearly to the bottom, it has the same objection that has been mentioned in connection with the bottle trap.

Traps made from lead pipe are shown in Figs. 5, 6, 7 and 8. After the pipe has been filled with sand it is heated, so that when a drop of water touches the pipe it will leave it at once; then the pipe may be bent without kinks or buckles, or without risk of destroying it. The trap in Fig. 5 is easily formed around a piece of soft wood 2 inches or more thick to make a true circle, and the ends are bent so that the inlet and discharge are in a straight line. All of these traps are provided with a trap screw and are made from D lead pipe. The shapes of these traps show that they are adapted for different purposes. They are mainly used in connection with small sinks or lavatories.

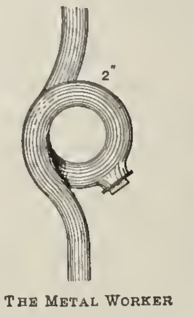


Fig. 5.—Straight Trap.

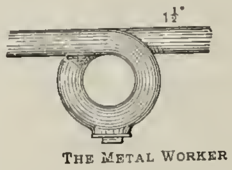


Fig. 6.—Running Trap.

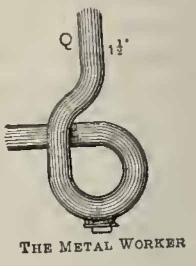


Fig. 7.—Half S Trap.

All sanitary experts agree in the claim that the full S-trap is the most perfect trap produced. In Fig. 9 a half S-trap is shown adapted for sinks or lavatories, when connected with the waste line and concealed behind the fixture. The claim is made by some that this trap can be partially emptied by capillary attraction. It has the advantage, however, of being thoroughly scoured every time the fixture is emptied.

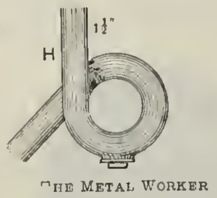


Fig. 8.—Three-Quarter S Trap.

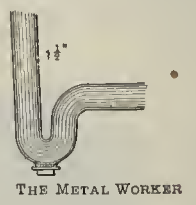


Fig. 9.—Half S Trap.

The plumber is frequently called upon to make either a round or an almost square bend in both service and waste pipes, as shown in Fig. 10. This requires a little skill and judgment. To make the square bend the pipe should be filled with hot, fine sand, packed down hard, and the pipe should be well heated, or to a temperature that will make a drop of water leave it as soon as it touches it. The bend should be turned short and should be made by taking a firm hold of one end, driving down with a soft pine block on the back of the pipe, so as to drive the lead into the crotch of the bend. This must be done on each side of the bend and the pipe should be dressed into shape with a soft piece of pine wood as a dresser. By patience and care this can be made with an exact angle in the crotch. Fig. 11 shows what is called the tinkers' bend, made by cutting a V shaped piece from the straight pipe, so that it can be bent down to form an angle and then either burned or soldered to make it perfectly tight.

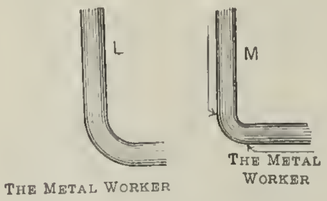


Fig. 10.—Plumber's Bends.

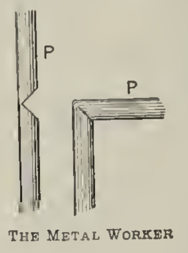


Fig. 11.—Tinker's Bend.

The plumber can impart some attractiveness to the appearance of his work if the customer will allow it. Fig. 12 shows an ornamental method of arranging the supply pipe to a wash basin. The main supply pipe, with the stop cock on it, is brought up through the lead safe to catch any water that might overflow and otherwise cause damage. The upper end of the stop cock is wiped into the side of a piece of pipe by means of a branch joint. This pipe is then bent in a circle until the two pieces meet, when both ends are bent so as to run vertically. One of the ends is soldered tight and forms an air chamber to take up any shock that will be caused by a quick closing of the faucet, and the other end receives the brass coupling for connecting the basin cock.

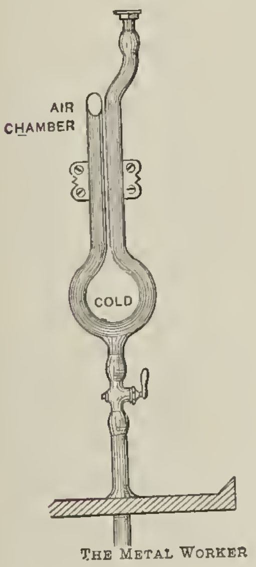


Fig. 12.—Air Chamber to Basin Supply.

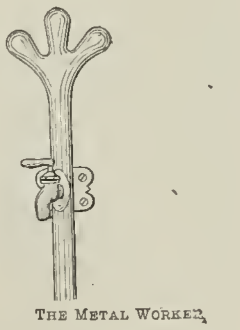


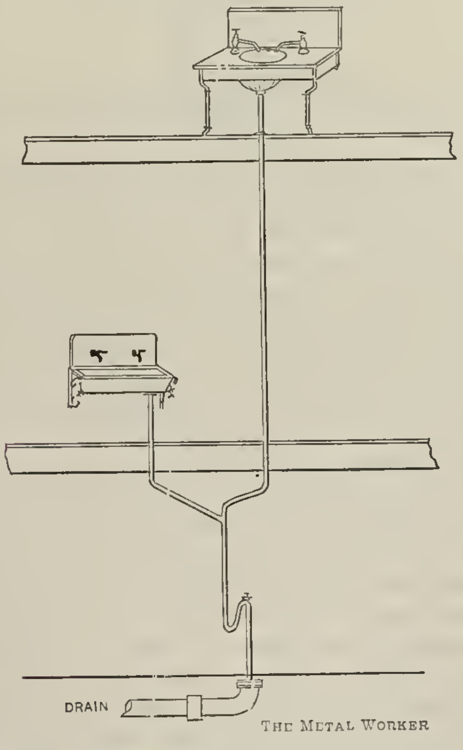
Fig. 13.—An Ornamental Air Chamber.

An ornamental air chamber above a sink bibb is shown in Fig. 13. Here the end of pipe is beaten by the plumber into a fantastical shape to show his skill as a lead beater and to please the eye of his customers, while serving the useful purpose of an air chamber.

IMPROPERLY ARRANGED TRAPS.

BY OLIVER TWIST.

Those of us who have had to remodel old plumbing work to remedy some objectionable feature can realize the wonderful combinations of blunders that are continually turning up; splendid object lessons of how not to do it. Fig. 1 shows how a job may be done for a customer, of which it could be said that the fixtures were good, the pipe heavy, the joints well made, and both fixtures trapped to keep out any sewer gas, and yet, after all, what an unsanitary job it is! Perhaps the plumber had not studied his business, or was inclined to be economical, as he used only one trap where he should have used two, and he placed that one at the cellar floor, leaving a long stretch of dirty pipe to generate gas and give off foul smells into the house. Instead of keeping sewer gas out of the house it was being kept in. Each fixture should have been trapped separately as close to the fixture as possible. Even if such were the case, the job would have still been bad, as when either fixture was discharged, the other, or both traps probably, would have lost their seal through siphonage. This might have been overcome by proper ventilation.



Improperly Arranged Traps.—Fig. 1.—An Example.

Some people have gone to the other extreme. Instead of not using enough traps to make a good job they have argued that if one trap is a good thing two must be better, and have placed two traps on one fixture. This double trapping is sometimes brought about unintentionally through the failure to look into the concealed portion of the work when adding new fixtures to old jobs. Numerous examples of this might be shown. Not long since the writer came across one like that shown in Fig. 2. It may have come about in this way: Years ago closets having a trap within themselves as a part of their make up were the exception rather than the rule, so that it was customary to put a 4-inch lead trap beneath the floor. When this needed renewal the plumber came along with his new earthen ware closet, which is already trapped and is a wonderful improvement over the old cesspool he removes. He either saw no harm in it, or he knew no better, for, instead of removing the old trap and rearranging the connections, which would mean quite a lot of extra work, which he would be unwilling to do after making a contract with the owner to put in a new closet for so much, he puts the new fixture in the same spot that the old one occupied.

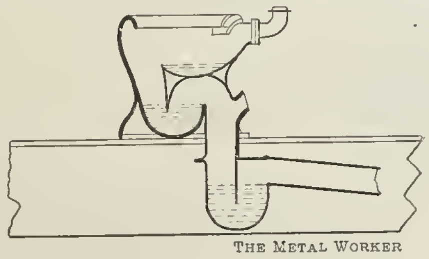


Fig. 2.—Additional Trap a Disadvantage.

If it be of the wash down variety there will probably be no ventilation from it. Consequently it will create an air lock between the two traps that will act like a spring or cushion when the closet is discharged and retard the flow through it, while retaining in the traps until the next flush matter that should be washed out clean to the sewer every time the closet is flushed. If it is of the wash out style it will appear as in Fig. 2, having a vent connection which will tend to improve matters by allowing the air to be removed from between the traps during the discharge, but will not do away with the other trouble mentioned.

Double trapping when applied to a sink is bad. The waste water will accumulate in it, perhaps half full, if the traps are not vented, before enough pressure is obtained to force the air lock, thus giving people the impression that the sink waste is stopped, but will clear itself in a little while, which it does as soon as more water is admitted. Siphonage is then produced and the contents run away quickly, just exactly as though a stoppage in the pipe had been removed.

Springfield Journeymen Plumbers.

The journeymen plumbers of Springfield, Mass., have presented the following resolution to the master plumbers for adoption:

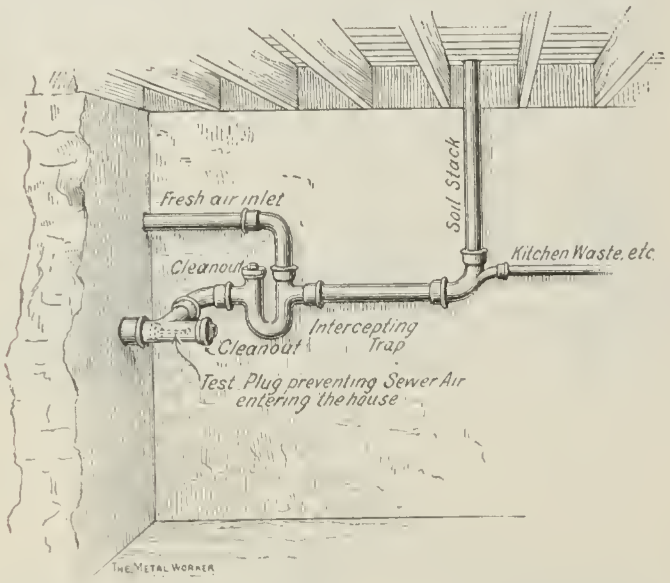
"On and after May 1, 1902, no helper or helpers shall be employed in any shop, and no member of the local union shall be allowed to have or work with a helper. Each shop may be allowed to have one apprentice only, and he shall be allowed to work with journeymen, and they shall instruct him in the trade. When no journeyman is constantly employed a shop shall not be allowed to have any apprentice or helper."

This resolution has been prepared for the purpose of limiting the amount of unskilled labor employed by master plumbers, and to work a remedy for the oversupply of journeymen plumbers in that vicinity.

Treatment of Plumbing Not Used in Summer.

BY HELMAR.

What to do to the ordinary plumbing system in order to guard the residence against the entrance of sewer gases during the summer months, while the family are sojourning in the mountains or at the seashore, is a problem that will probably never have a solution specific enough to admit of universal application. The condition sought is always the same, but the construction of buildings, installation of plumbing, type of fixtures, &c., vary so much that the precautions which prove effective in one job are futile in another. And the question is often made more perplexing by the owner insisting on leaving part of the job in operation and in the care of servants, who, no matter how good their intentions, seldom follow instructions. As the time is now near at hand when plumbers will again be called upon to perform such work, the experience of one of them will be welcomed by many.



Treatment of Plumbing Not Used in Summer.—Fig. 1.—A Positive Seal of Sewer Pipe.

The most general method is to empty the traps and fill them with something that will not evaporate or dry up so quickly as water. This is cheap and quickly done, and, as a rule, the plumber is not called again when the family returns, because the fillings can be " flushed " out with water, which is one reason why the plan is more or less unreliable, according to circumstances, and is never so safe as when sewer air is excluded from the house entirely. Glycerine, kerosene, castor oil or lard oil is used. Glycerine is best, and kerosene is a good second choice where there is no danger of it being either sucked or waved out by vacuum or pressure, as is sometimes done by storm water when the house drainage and storm water are carried by the same pipe and the relief vents poorly arranged or proportioned.

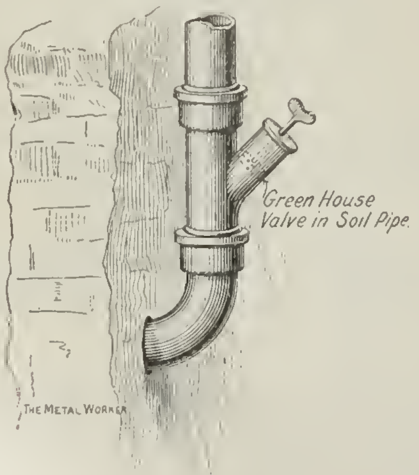


Fig. 2.—An Improvised Valve.

When any of the above seals are depended upon water must not be dumped nor drawn into the fixtures. Every trap, except water closet traps, has, or ought to have, a drain screw or top cap through which the water seal can be drawn or soaked out with a sponge or rag. Water closet traps always have to be soaked out. Only the upper trap of double trap closets need be filled, but the air pipe must be fitted with a blind washer to keep sewer air from coming out through the tank. The contents of each trap should be noted when the water seals are being taken out, as the amount of water removed gives a fair idea of how much glycerine should be put in. Before emptying, the traps should be flushed well to cleanse them and to make sure that the seal is as deep as the trap will permit. The trap should be well wiped with a swab, and examined before filling to see that there are no strings, hair or lint hanging over into the waste pipe. These, if present, will rob the trap of the filling by capillary attraction.

When none of the fixtures are to be used during the summer months, the writer has found it a good plan to insert a test plug through the clean out where the main soil pipe leaves the house and expand it so as to prevent air from the sewer from entering the house at all. The handle of the plug should be in far enough to permit screwing on the clean out cover. This plan leaves only the foul surface of the house system to deal with, and if the fresh air inlet is in proper condition it will keep the system filled with fresh air at all times, and the job would be comparatively safe without further work.

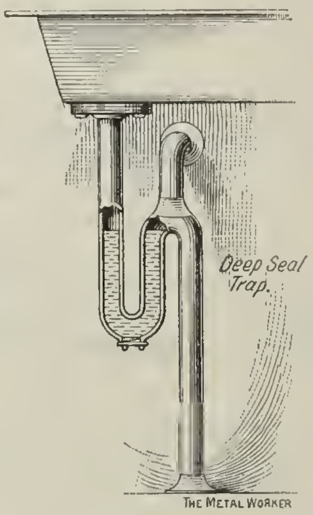


Fig. 3.—A Deep Seal Trap.

If no clean out exists, as shown in Fig. 1, the clean out of the intercepting trap may be removed and a short handle test plug dropped in and expanded in the out leg of the trap and the trap cover replaced air tight. When the plug is set with the handle upright, it will do no harm to pour in enough glycerine to cover the ring and plate.

If the intercepting trap is outside of the house, plugging the pipe through a clean out also cuts off the ingress of air to the house system through the regular fresh air inlet. This may be gotten over by providing a temporary inlet from the outside, connecting the same with the clean out opening.

On two occasions the writer has left off the clean out cap, thus allowing the vent stack to draw air from the cellar. No complaint was heard, and nothing discovered that would deter him from doing so again, but he does not recommend the practice. Where no clean out exists through which the pipe may be plugged, the writer would not hesitate to break the line and put one in, full size, with brass screw cap. The clean out will not only be serviceable on sundry occasions otherwise, but also serves from year to year as a means of plugging the pipe for this special purpose.

The writer was called to put the plumbing in order after a family had returned from the country and found their regular plumber had died. In the sewer side hand hole of the intercepting trap he found a wad of paper over which was a layer of hydraulic cement, covered by ¾ inch of asphalt varnish. The trap had two hand holes, and there was no fresh air inlet in the job. The house side hand hole was open, and the sewer side closed, the loose cover being wired to the trap. This proved that more than one plumber was working along the same line of thought, though unknown to each other.

In Fig. 2 is shown a soil pipe, where it passes out through the wall, in which the owner, a florist, had placed a peculiar form of greenhouse heating pipe valve. The valve, although of favorable design, was somewhat of an obstruction, but it accomplished the idea of shutting sewer air out of the house during the summer while the family were away.

Plugging the soil pipe makes it necessary to stop the supply to the fixtures, either shutting off the faucets tight and leaving them so, or by shutting off the water and draining the pipes. If the boiler is also emptied, the sediment cock should be closed again. The writer prefers to leave the boiler filled. If emptied, there is some danger of injuring the water back by having a fire started while it is empty. If left filled, the boiler must be emptied and thoroughly cleansed before the work is again put in operation. When the supplies are drained the faucet washers dry out, get hard and give trouble when the water is again turned on, and one must watch all unions that have washers in them. In fact, it is safer to rewasher all unions and faucets to begin with, if the supply has been empty during the summer.

If the soil pipe has been plugged as described, the next thing to do toward making the work perfectly safe is to choke the waste pipes of all the fixtures above the traps. If this is not done, the air current through the pipes soon evaporates the seals and leaves the traps open for the passage of whatever gases there are in the pipes. The deep water seal trap shown in Fig. 3 is not a barrier to be depended upon during the warm summer months. It is excellent for rented houses where people are moving in and out at all times of the year, and where the fixtures are out of use but a few weeks at a time. Glycerine is not too expensive to seal traps against evaporation, but it may be displaced by some one inadvertently dumping water into the fixture.

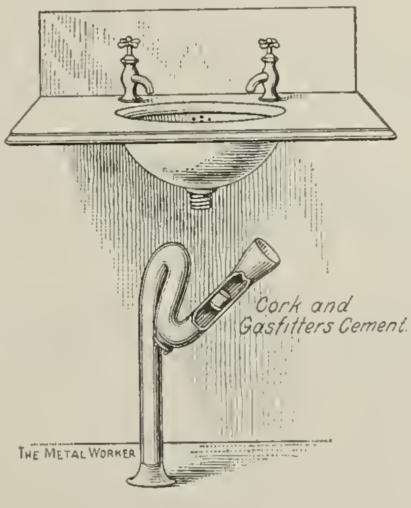


Fig. 4.—Lavatory Trap Disconnected and Corked.

Baths may be choked by lifting out the standing waste stem and plugging the bottom of it tightly with a cork. On lavatories with lead traps the traps can be bent down and choked with a cork and made air tight by melting cement over the top of the cork as indicated by Fig. 4, or a blind washer of sheet lead may be soldered over the top. Sink traps can be treated the same as lavatory traps. Slop sinks can be choked effectively by screwing a blind plate down in putty in place of the regular strainer. Brass lavatory traps can be loosened from the metal bowl plug or standing waste and a blind metal washer put in on top of the ring washer and again tightened up, as indicated by Fig. 5.

The variety of traps, fixtures and conditions are too numerous to be covered in a single article, but what has been said, together with some general directions and the exercise of common sense, will fit any plumber for reliable service in the line of work in question.

An accurate memorandum of what is done to a job should be made when it is finished, because the plumber doing the work may get sick while the work is being done or he may not be available when, in the fall, the job is to be made ready for use again. Or he may have forgotten what he did, and an overflow or other needless trouble and damage may be caused unless there is a guide to work by.

Leather flush washers shrink, crack and sometimes draw entirely out of place when work is not in use. Rubber washers that are not pure are often found cracked and worthless, too. So all washers should be examined before water is turned on or into the fixtures. Putting a job in order again after a summer's idleness is simple enough when it is remembered that it should be put in the same condition in which it was found in the spring. Any repairs found necessary should be done, whether caused by natural wear and tear or as a result of the work in hand.

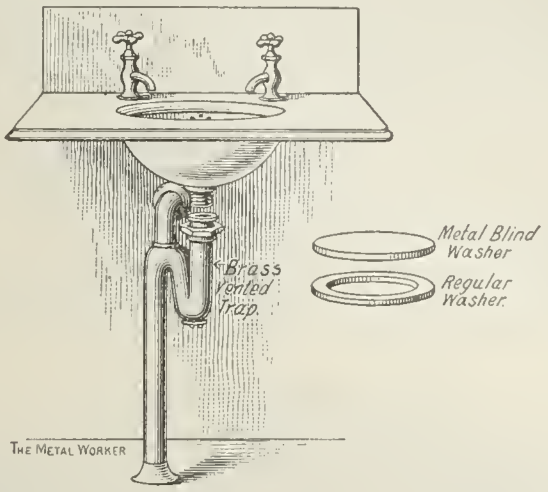


Fig. 5.—Brass Trap Sealed with Blank Washer.

When some of the fixtures are left in operation for the convenience of servants, the servants must be held responsible for the regular use of those fixtures, and the servants should be made acquainted with the condition of the balance of the plumbing. If the whole job is left normal, the servants should flush each fixture every day. If not, a sign of warning should be placed on every fixture having the waste choked. The toilet rooms should be properly aired, as usual, and the doors locked between times, if servants are left in the house at all.

Water closets are the most difficult to choke up safely. The trap can be "soaked" out and sealed with glycerine and the seat fastened down; but perhaps the safest plan is to turn off the supply, drain the tank and remove the closet from the floor and solder the end of trap or bend tightly to the floor.

New York City Notes.

Trade in general still continues quiet, although many shops are busy with old work on hand. Most of the new work in the market is in the line of large buildings requiring many feet of pipe, but without the labor and general material needed in a row of Harlem flats.

* * *

Speaking of Harlem flats as known in former years, the Tenement House Law has completely done away with them. Callan & Oliver, however, are plumbing a row of buildings for Sonn Bros., situated at 140th street and Lenox avenue, which are of the type and cost of buildings destined to supersede the old style of building.

* * *

With many men out of employment at present and not too much work in sight the journeymen plumbers are asking $4.50 a day, with a half holiday on Saturday, the same to commence May 15.

* * *

W. G. Cornell of 54 Lexington avenue is rushing work on his jobs in the office buildings at Maiden lane and Broadway and William and Cedar streets and is having hard work to keep ahead of the tenants moving in. He also has a large force of men at work in the 20-story "Flat Iron Building," at Broadway, Fifth avenue and Twenty-third street.

Commodore Gaynor of the Jefferson Yacht Club put in a new length of leader pipe in the club's flagship last Sunday. As flounders are biting well in Jamaica Bay, the boats of the fleet are in great demand every Sunday.

ASSOCIATION NEWS.

California Master Plumbers.

The annual meeting of the Master Plumbers' Association of California was held at San Francisco, April 24, and was largely attended. The delegates were entertained by an excursion to Oakland, where they were given a banquet by the Master Plumbers' Association of Oakland. They were also given an excursion on the bay, and the San Francisco Association tended them a dinner at Golden Gate Hall. After selecting Los Angeles as the place for holding the next convention, the following officers were elected for the ensuing year:

President, James E. Britt, San Francisco.

Vice-President, T. J. Stephens, Los Angeles.

The association has joined the Interstate League of Master Plumbers.

Texas Master Plumbers.

In response to a call issued by President Shafer, former president of the Master Plumbers' Association of Texas, the master plumbers from all parts of Texas met in San Antonio on April 21 for the purpose of winding up the business of the old association and formally disbanding, in obedience to the laws of Texas, as laid down in the recent suits for violation of the anti-trust laws. After a full discussion of the situation a resolution was adopted disbanding the old association. Immediately afterward a meeting was held and a new association formed with the following officers:

President, Ed. Braden, San Antonio.

Vice-President, J. W. Shumate, Austin.

Treasurer, J. W. Theel, Houston.

Secretary, D. Woodhead.

Dr. G. R. Tabor, city health officer, was elected honorary vice-president, and Beaumont was selected as the place for holding the next meeting. A committee on constitution and by-laws was appointed, and it was ordered that the constitution be framed and submitted to the Attorney-General of the State for his approval or disapproval, all objectionable features to be eliminated from it, as he might dictate.

A MASTER PLUMBERS' ASSOCIATION has been organized in Morgantown, W. Va., composed of the following members: L. W. Joseph, James H. Kennedy, and Hough & Bond. The officers are: L. W. Joseph, president; James H. Kennedy, treasurer, and Fred. A. Bond, secretary.

Employees Remembered by Mr. Hooper.

Those who enjoyed the acquaintance of B. Frank Hooper, president of the Colwell Lead Company, New York, who died on April 20, will have additional cause to honor his memory in learning of some of the provisions of his will. His many acts of generosity during his life were in most instances unknown except to those who profited by them. By the provisions of his will he left $1000 each to his friends, Edgar Vanderbilt and Robert E. Cary, and $200 to every employee who had been 15 years with the Colwell Lead Company. The expressions of sympathy and condolence that have reached his associates and family have been overwhelming in number, coming from leaders in the business world and humbler citizens alike.

THE VAPOR STEAM HEATING COMPANY of York, Pa., have moved their office to 917 Arch street, Philadelphia. A. P. Broomell, president of the company, will continue at 10 North George street, York, Pa., for some time yet, and the Philadelphia office will be in charge of E. M. Barker, heating engineer, assisted by Ralph Ebaugh.

Heating and Plumbing Notes.

A MEETING of the National Committee of the Confederated Supply Associations was held at Niagara Falls, N. Y., on Thursday, for the purpose of attending to the various matters which have been presented to the committee since their meeting in October. As far as can be learned, this meeting was a regular one and has no special significance.

R. WILLIAMSON & Co., manufacturers of Gas Fixtures, Chicago, will occupy in the near future a fine five-story building, 48 x 100 feet, at 61 to 63 Erie street. Plans have been prepared for this building, which is already under lease to the firm.

THE NATIONAL PIPE BENDING COMPANY, New Haven, Conn., manufacturers of the National Feed Water Heater, who make a specialty of Coils and Bends of Iron, Brass and Copper Pipe of all sizes, are distributing a neat catalogue showing illustrations of the great variety of Coils which they can furnish. A portion of the catalogue is devoted to Expansion Bends, Return Bends, and large sweep Elbows for large piping systems. A feature of the publication is a series of perforated pages showing sectional views of Coils of various styles. These are intended to be torn out from the catalogue and sent as an order for Coils, there being a blank space under the cut in which to fill out the necessary dimensions and descriptions, thus avoiding errors in ordering goods.

L. B. DOZIER & Co., Columbia, S. C., began business as jobbers in Plumbers' Supplies on January 20 of this year. They also install steam heat in business buildings and private residences, and handle Gas and Electric Fixtures. They aim to do business both in the city of Columbia and throughout the State of South Carolina. Mr. Dozier, who is the principal owner and manager, was for six years Southern manager for Lantz Brothers of Buffalo, N. Y., with headquarters at Columbia. The company state that they have had a liberal supply of catalogues since starting, but would be happy to receive such literature from houses who have not yet favored them.

THE plumbers of Seattle, Wash., are preparing to conform to the provisions of the new State law affecting plumbers and are filing applications to take out licenses. The examining board will hold the examinations later.

THE PATRICK NACEY COMPANY of Chicago, Ill., have secured the contract for plumbing the new station of the Chicago & Northwestern Railroad at Sioux City, Iowa. The amount of the contract is said to be over $5000.

THOMAS HIGGINS, a plumber, of Louisville, Ky., aged 40 years, dropped dead in the street from apoplexy on April 21.

THE plumbing establishment of Charles Summerill, at Newtown Square, Pa., was destroyed by fire Sunday.

THE Supervising Architect, Washington, D. C., will receive bids until June 2 for plumbing and heating the Hygienic Laboratory of the United States Marine Hospital service at Washington.

THE J. L. MOTT IRON WORKS, 88 Beekman street, New York, have entirely completed the arrangement of their steam and hot water sample room, which has been described in *The Metal Worker*. The decoration of the company's Radiators and Boilers and their arrangement is well worth a visit from the heating contractor, who may wish to secure hints for the arrangement of his own sample room, in addition to other information in reference to the construction, capacity and dimensions of both Boilers and Radiators.

THE HART & CROUSE COMPANY of Utica, N. Y., and 235 Water street, New York, are issuing a sheet giving the dimensions of their new, large Royal Steam and Hot Water Heater. This Boiler is made with a grate 40 inches wide and from 38 to 80 inches long, composed of from 6 to 12 sections. The completed Heater stands 84 inches high and 72 inches wide. The Steam Heater has a 57-inch high water line. The largest size is rated to carry 10,800 square feet of direct hot water radiation and 6500 square feet of steam radiation.

The New York Radiator Company of Utica, N. Y., and 235 Water street, New York City, are distributing circulars of the New York Radiator for steam and hot water heating, showing, by means of a half-tone engraving, a very attractively designed three-column Radiator, which is made in all the usual hights, from 18 to 41 inches.

George E. Versoy, representing the Master Plumbers' Association, appeared before the South Orange, N. J., village Board of Trustees, for the purpose of securing an ordinance regulating plumbing of all kinds. It is said that his petition will be acted upon favorably by the board.

A slight fire visited the plumbing supply house of Edwin Hawes, at Worcester, Mass., on April 23.

The examination for appointment to the office of plumbing inspector at Utica, N. Y., was made so difficult that instead of having three eligibles to select from, as the law requires, but one candidate possessed the necessary information to qualify him. It is said that in order to satisfy the provision of the law another examination will be held which will be made less difficult. The question is raised whether or not this will be just to the candidate who passed the more difficult examination.

Master plumbers and helpers of Washington, D. C., to the number of 90, recently finished up the work on the Plaza Apartment House on Washington Circle. This is the last large job of work in that city which was in need of being rushed through. It is claimed that the master plumbers are in a position to hold out indefinitely on the questions which have brought about the strike in the plumbing trade in that city.

George W. Dunn, president of the Board of Trustees of the New York State Soldiers' and Sailors' Home, at Bath, N. Y., will receive bids until May 8 for heating, plumbing and electric wiring and lighting fixtures for a barrack for convalescents at the Home.

An agreement has been reached by the plumbers of Lynn, Mass., relative to apprentices, which provides that no apprentices shall be taken under the age of 17 years, and that they shall serve five years' time. It restricts the number of apprentices, allowing but one to each shop, and only permitting an additional apprentice when four or more journeymen plumbers are employed. After an apprentice has served four years of his time an additional apprentice will be allowed. The apprentice will be allowed to use the tools after serving three years. After his second year he shall receive not less than $1 per day less than the regular rate of wages, and the last two years of his time he shall receive the standard rate of wages.

T. P. Wenner, secretary of the Board of Control of Allentown, Pa., will receive bids until May 6 for heating and ventilating the new Sixth Ward School Building in that city, and also for heating the Franklin Building and for the extension to the heating system in the Washington Building.

Elmer Doolittle, who has been visiting the plumbing trade in the vicinity of New York for the past seven years, resigned his connection with H. H. Beals on May 1 to accept a position with E. S. Wheeler & Co. of New Haven, Conn., with branch office in New York. He will continue to visit his old friends in the trade the same as heretofore.

The Curtis & Curtis Company, 56 Garden street, Bridgeport, Conn., have arranged with H. Weiss & Co., Twenty-fifth street, New York, to handle the Forbes Patent Die Stock for cutting and threading wrought iron pipe, pipe vises, pipe cutters and other tools made by the company, so that these goods can be secured promptly in New York City. They issue a very attractive little catalogue devoted to these goods.

The members of the Southern Supply & Machinery Association, recently organized at Charleston, S. C., naturally handle a great many goods adapted for steam, water and gas, and, with a view of steering clear of any conflict with the interests of their customers, they are in correspondence with the National Committee of the Confederated Supply Associations, so that they may learn their methods and handle the Plumbing and Steam Supplies in accordance with the customs which are recognized in that branch of trade.

The steam fitter will find in the catalogue issued by Kieley & Mueller, 7 to 17 West Thirteenth street, New York City, many appliances which will simplify his work and increase the efficiency of the apparatus he may install, whether of high or low pressure. Pressure Regulators are shown, which are made both for reducing the pressure of steam carried on power boilers to the low pressure used on heating boilers, and for reducing water pressure, where the street pressure is too high for convenience in connection with plumbing systems, and also a variety of Back Pressure Valves, which will be of interest to those who install exhaust steam heating systems.

New Firms and Changes.

Thomas Whalen and Charles Gray will form a partnership in the plumbing business at Albany, N. Y.

Frank S. Lamson has opened a plumbing shop in the Higgins Building, at Bordentown, N. J.

Hough & Bond have opened a new plumbing shop in Morgantown, W. Va.

The Standard Water Still Company, Portland, Maine, have been incorporated with a capital of $10,000, to purchase patents for improving Water Stills and dealing in the same. The officers are: President, R. S. Davis; treasurer, G. W. Davis, both of Portland, Maine.

The Small Brothers Plumbing Company have been incorporated at Denver, Col., with a capital of $10,000 by James S. Small, George R. Small and R. M. Small to conduct a general plumbing business.

The General Lighting Appliance Company and the Phœnix Gas & Electric Mfg. Company, St. Louis, Mo., have consolidated as the St. Louis Brass Mfg. Company, and will shortly incorporate with a capital stock of $50,000. The company are having plans prepared for a new plant for the manufacture of Gas, Electric and Combination Fixtures, Brass and Bronze Castings, &c.

Joseph F. Shatzer has withdrawn from partnership in the plumbing firm of Trotter & Shatzer, at Altoona, Pa., and will reopen his plumbing shop at Hollidaysburg, Pa.

H. M. Porter and A. M. Bancroft have entered into a partnership in the plumbing business, at 139 State street, Springfield, Mass.

Horrigan & Co. are a new plumbing firm at 52 Mechanic street, Bradford, Pa., composed of Barney Horrigan and Will McCaffrey.

The Southern Sewer Pipe Company of Birmingham, Ala., have been organized with a capital stock of $100,000 for establishment of a large Sewer Pipe plant. The officers are: S. L. Russell, president and general manager; C. S. Bissell, vice-president and business manager; J. A. Menge of New Orleans, La., secretary-treasurer. The company have the privilege of increasing their capital stock to $200,000, and will manufacture Sewer Pipe, Tiling, Underground Conduits, Fire Proof Filing, &c.

We are informed that the old established firm of the Gleason & Bailey Mfg. Company, Seneca Falls, N. Y., have been succeeded by the Gleason-Bailey-Sciple Mfg. Company, who will be pleased to hear from the trade when in need of anything in the line of Pumps, Cast Iron Fittings, Yard Hydrants, Street Washers, Hydraulic Rams, Gas and Gasoline Engines. They call attention to their special Grey Iron Castings, which they are prepared to furnish on short notice at reasonable prices. The company are also in a position to furnish special Castings, with threads cast by a special patented process, thereby doing away with the extra expense of tapping and threading.

The Cosmopolitan Light Company of Chicago, Chicago, Ill., capitalized at $1,000,000, recently filed articles of incorporation. The company will manufacture and sell all kinds of Incandescent Mantles, Gas and Gasoline Fixtures, and other illuminating appurtenances. The incorporators are: W. S. Williams, John A. Dover, Otis James, C. N. Rudolph, Chicago, and Gardner W. Kimball of Wilmington, Del.

Pattern for Sunburst.

A New York correspondent asks us how to obtain the pattern of an article, of which he incloses a sketch, and which he thinks is called a triangular sunburst. In the diagram, which is reproduced in Fig. 1, A B C is the plan view of the sunburst and D E F the elevation on the line B C in plan. It is required that the distance N I in plan be greater than I H, and that J K L represent the section on I H, showing the pitch of the flutes. The problem, as our correspondent presents it, gives an interesting study in raking profiles and pattern drafting.

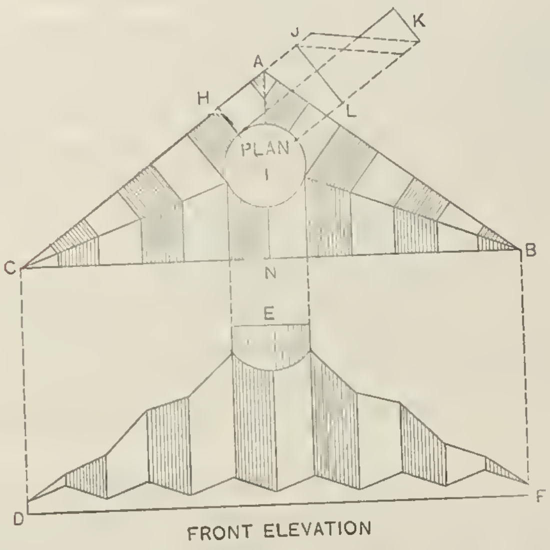


Fig. 1.—Reproduction of Correspondent's Sketch.

In Fig. 2 is shown an enlarged half plan, showing the sections and profiles and points of intersections on the pitched lines. Let A B C represent the one-half plan of sunburst and D E F the half plan of the cylinder, against which the flutes are to miter. Draw the true profile on A B in plan at pleasure, which will at once be the pattern for the closed end, as shown by H I J K.

Number each bend as shown from 1 to 8. From A in plan draw the miter line A G, intersecting the half circle D E F at E, G representing the center point from which the semicircle is struck. At right angles to A B and from the intersections 1 to 8 in the true profile draw lines, as shown, intersecting the miter line A E from 1 to 8. Draw a line from H to 3 in the true profile on A B and extend the line 2 2, intersecting the base line K J at *a* and H 3 at *b*, and call the point 2 *c*. Then will *a b c* represent the vertical hights of the flutes on the line A B in plan, which will be used in constructing a section on B G in plan, as follows:

Draw any line, as L M, parallel to B G. At right angles to B G and from B and G draw the lines L R and M P indefinitely. Take the hights *a*, *b*, *c* in the true profile and place them, starting from M, as shown by *a'*, *b'*, *c'*, thus obtaining the points M, O, P, in section. Now establish at pleasure the point R on the line L R and draw a line from R to P, and from O draw a line parallel to R P, as shown by O N. At right angles to R P draw any line, as *e f*, which will represent the depth of the flutes at right angles to the rake. Then will N O P R be the true section on B G in plan, and N R R^2 X the section of the cylinder on G F in plan. It will now be necessary to obtain a true section on the line *e f* in section, as follows: Take the distance *e f* and place it on the line A K, extended, as shown, from *e'* to *f'*. Parallel to K J and from *e'* and *f'* draw the lines *e' l* and *f' m*. At right angels to K J and from points 2, 4, 6 and 8 in the true profile drop lines, intersecting the line *e' l* at 2', 4', 6' and 8', and at right angles to K J and from points 1, 3, 5 and 7 drop lines, intersecting the line *f' m* at 1', 3' 5' and 7'. Now connect the points, as shown by the lines 1' to 2' to 3' to 4' to 5' to 6' to 7' to 8', which will represent the true profile on the line *e f* in section.

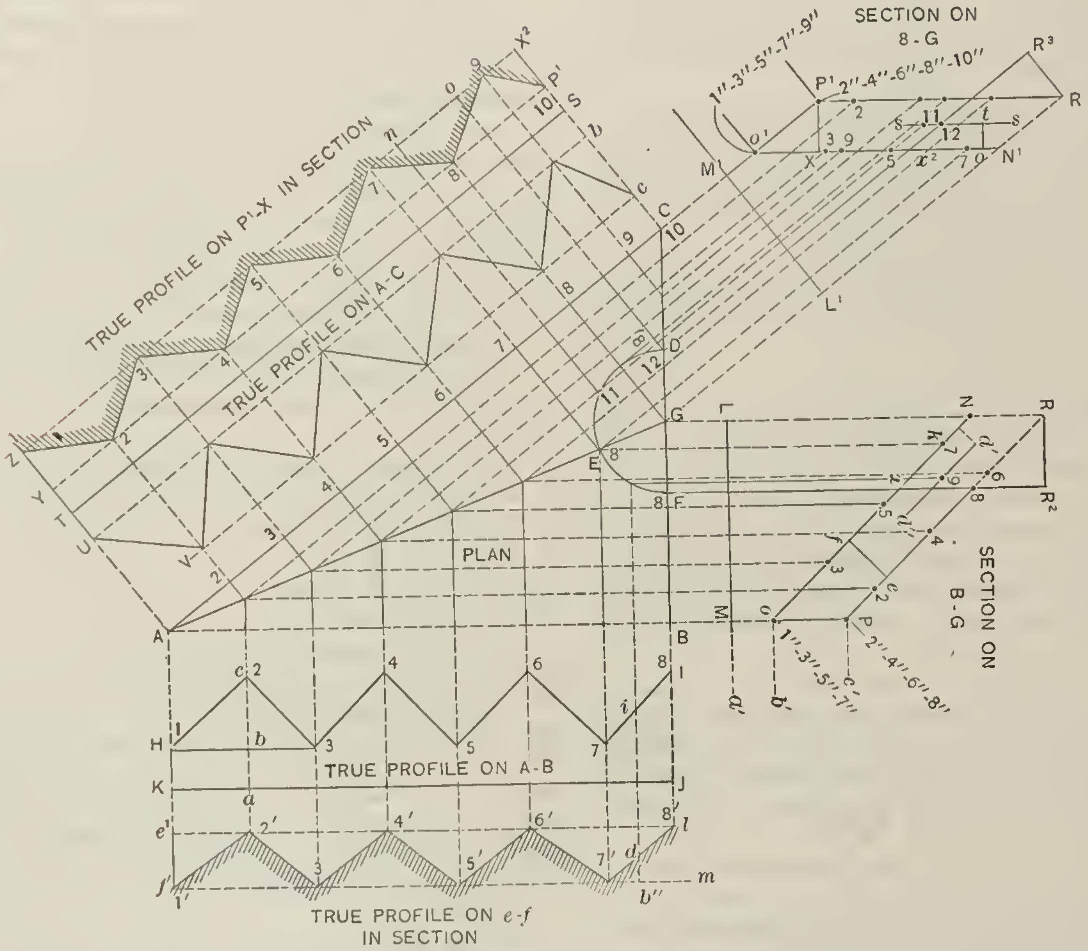


Fig. 2.—Enlarged Half Plan, Sections and Profiles.

PATTERN FOR SUNBURST.

As the line R P in section represents the points shown in the profile having even numbers, as 2', 4', 6', 8', and the line N O in section represents the points shown in profile having uneven numbers, as 1', 3', 5' and 7', then, at right angles to G B in plan and from points 2, 4, 6 and 8 on the miter line in plan, erect lines, intersecting the line R P in section, as shown by points 2, 4, 6 and 8. In similar manner, at right angles to G B and from points 1, 3, 5 and 7 on the miter line in plan erect lines, intersecting the line N O in section at points 1, 3, 5 and 7. Now, at pleasure, between the arc E F in plan, establish the point 9, and parallel to F B drop a line, intersecting the true profiles at i and d and the line $f'\,m$ at b''. Take the distance from b'' to d and place it at right angles to N O in section, as shown by K d'. From d', parallel to N O, draw a short line, as shown by $d'\,d''$, which intersect by a line drawn from the point 9 in plan at right angles to G B, thus obtaining the point 9 on the line $d'\,d''$ in section. As P O in section represents the vertical cut through the flutes, then will P represent the even numbers in profile, as shown by 2″, 4″, 6″ and 8″, and O the uneven numbers, as 1″, 3″, 5″ and 7″. Having obtained the points of intersections on the section, the pattern is developed as shown in Fig. 3, in which R P O N, with the various points of intersection on same, is a reproduction of R P O N in section in Fig. 2 with the various intersections.

section on B G and place them, as shown, from L^1 to N^1 R^1 in the section on 8 G. In similar manner take the hights from M to O to P in the section on B G and place them in the section on 8 G, as shown, from M^1 to O^1 to P^1. Now draw a line from R^1 to P^1 and from N^1 to O^1. Then will N^1 O^1 P^1 R^1 be the true section on 8 G in plan and N^1 R^1 R^3 X^1 the section of the cylinder on '8 G in plan.

From the point P^1, at right angles to P^1 R^1, draw the line P^1 X, which gives the depth of the flutes at right angles to the rake. At right angles to A C in plan and from the various intersections from 1 to 7 on the miter line draw lines, intersecting the line A C from 1 to 7. Set the dividers equal to one of these spaces and step off on A C, 7 to 8, 8 to 9, and let 9 to 10 be as it may. Then, at right angles to A C and from the intersections 1 to 10 on A C draw dotted lines indefinitely, as shown.

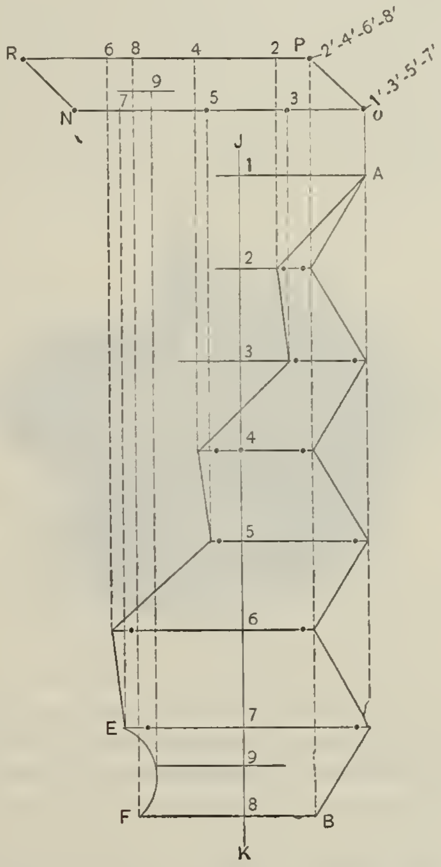


Fig. 3.—Pattern for A E F B of the Plan, Fig. 1.

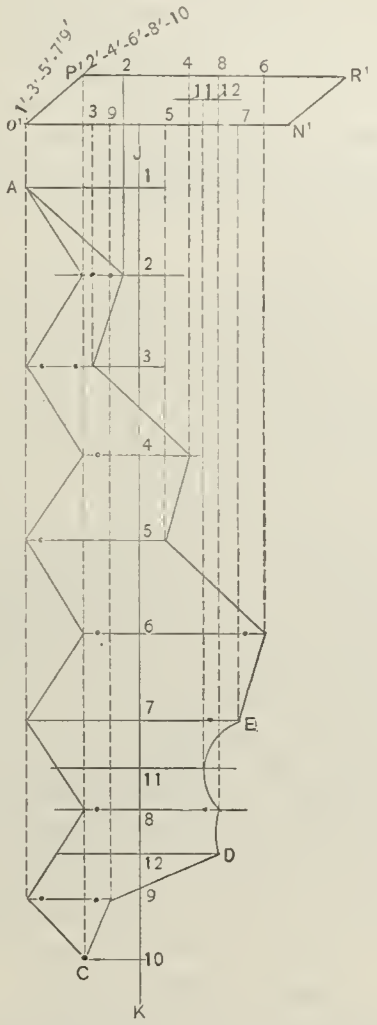


Fig. 4.—Pattern for A C D E of the Plan.

PATTERN FOR SUNBURST.

At right angles to R P in Fig. 3 draw the line J K, upon which place the stretchout of the true profile on $e\,f$ in section in Fig. 2, as shown by the small figures 1, 2, 3, 4, 5, 6, 7, 9, 8 on the line J K in Fig. 3. At right angles to J K and through these small figures draw lines indefinitely, as shown, which intersect with lines drawn at right angles to R P from intersections having similar numbers, as shown in R P O N. A line traced through points of intersection thus obtained, as shown by A B F E, will be the pattern for A B F E in plan in Fig. 2, formed after the profile $f'\,l$, while the true profile on A B will be the pattern for the vertical face of the flutes shown by P O in the section.

As the distance 8 G at right angles to A C in plan is less than G B, it will be necessary to construct a true section on 8 G in plan from which to obtain the true profiles necessary to form a miter with the opposite flutes on the line A E in plan. Therefore, parallel to 8 G draw the line M^1 L^1, and at right angles to 8 G and from points 8 and G erect the lines G R^1 and 8 P^1 indefinitely, as shown, intersecting the line M^1 L^1 at M^1 and L^1. Now take the hights from L to N to R in the

At pleasure draw any line, as S T, parallel to C A. Now take the hights from M^1 to O^1 to P^1 in the section and place them at right angles to S T, as shown by S b c. From b and c, parallel to S T, draw the lines b U and c V, letting b U, which represents the bottom line of the flutes, intersect the lines drawn from uneven numbers, as 1, 3, 5, 7 and 9, and the line c V intersect lines drawn from even numbers, as shown by 2, 4, 6, 8 and 10. Trace a line through points thus obtained; then will T U V c b S be the true profile on the line A C in plan, shown in section by O^1 P^1, and will at once be the pattern for the vertical bottom or head to close the ends of the flutes on the line A C in plan.

For the true profile on P^1 X in section draw any line parallel to C A in plan, as X^2 Z. Take the distance from X to P^1 in the section and place it, as shown, from X^2 to P^1, at right angles to Z X^2. From P^1 draw a line parallel to X^2 Z, as shown by P^1 Y. As X^2 Z represents the bottom of the flutes, then must this line intersect uneven numbered lines, as 1, 3, 5, 7 and 9, and the line P^1 Y intersect even numbered lines, as 2, 4, 6, 8 and 10. Draw lines connecting these numbers, as shown by the shaded lines 1 to 10; then will Z P^1 be the true profile on P^1 X in section. As the line P^1 R^1 in section represents the points shown in the profile Z P^1 having even numbers, as 2, 4, 6, 8 and 10, and the line N^1 O^1 in section represents the points shown in profile Z P^1 having uneven numbers, as 1, 3, 5, 7 and 9, then, at right angles to 8 G in plan and from points 2, 4, 6 and 8 on the miter line erect lines, intersecting the line R^1 P^1 in section, as shown by points 2, 4, 6 and 8. In similar manner, at right angles to 8 G in plan and from points 1, 3, 5, 7 and 9 on the miter line in plan erect lines, intersecting the line N^1 O^1 in section at points 1, 3, 5, 7 and 9. Now, at pleasure, on the arc E D establish any point, as 11, and call the point D 12. From the points 11 and 12 and parallel to 8 G draw lines, intersecting the true profile Z P^1 at 11 and 12 and the base line X^2 Z at *n* and *o*. Take the distances *n* 11 and *o* 12, which in this case are equal, and place them at right angles to N^1 O^1 in section, as shown by *o t*. Through *t*, parallel to N^1 O^1, draw a short line, as shown by S S, which intersect by lines drawn from points 11 and 12 in plan at right angles to 8 G, thus obtaining the points 11 and 12 on the line S S in the section. As P^1 O^1 in the section represents the vertical cut through the flutes, then will P^1 represent the even numbers in the profile, as shown by 2" to 10", and O^1 the uneven numbers, as 1" to 9".

Having all the points of intersections on the section, the pattern is obtained as shown in Fig. 4, in which R^1 P^1 O^1 N^1, with the various points of intersection on same, is a reproduction of R^1 P^1 O^1 N^1 in section in Fig. 2 having similar intersections. At right angles to R^1 P^1 in Fig. 4 draw the line J K, upon which place the stretchout of the true profile on P^1 X in section in Fig. 2, as shown by the small figures 1, 2, 3, 4, 5, 6, 7, 11, 8, 12, 9, 10 on the line J K in Fig. 4. At right angles to J K and through these small figures draw lines indefinitely, as shown, which intersect with lines drawn at right angles to R^1 P^1 from intersections having similar numbers in R^1 P^1 O^1 N^1. A line traced through points of intersections thus obtained, as shown by A C D E, will be the pattern for A C D E in plan in Fig. 2, formed after the profile Z P^1. It should be understood that the two patterns in Figs. 3 and 4 represent the half panel or sunburst, therefore there must be two of each pattern cut, one formed right and the other left. The pattern for the cylinder is not necessary, as that is made the same as a tube and slipped inside the circular opening of the sunburst.

New Tin Plate Plant.

L. C. McFatridge, Henry Rhodes, Jack Hobbs and others of Atlanta, Ind., are organizing the Atlanta Rolling Mill & Tin Plate Company for the purpose of reestablishing the tin plate industry in the Atlanta Steel & Tin Plate plant, recently dismantled by the American Tin Plate Company. They have in hand a bonus of $25,000 from the city, and have received subscriptions for $75,000 worth of stock. It is their intention to incorporate the company with a capital stock of $150,000 and to install a modern four-mill plant at first, which will later be increased to six mills. The power plant will comprise 1000 horse-power of engines and boilers. No equipment has as yet been purchased. Address communications to L. C. McFatridge.

Master Coppersmiths' Club.

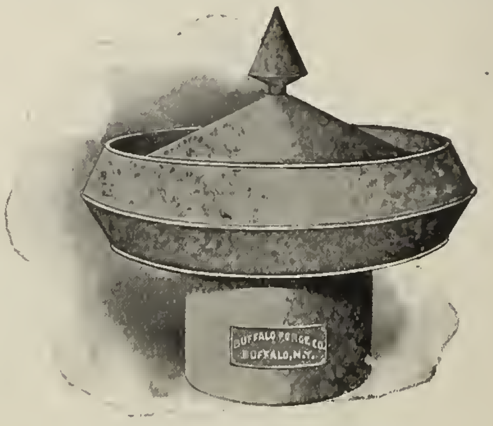
For some time past the master coppersmiths and journeymen in their employ have been conferring for the purpose of improving trade conditions. The former have recently completed the organization of the Master Coppersmiths' Club of New York and vicinity, having for its object the protection of the interests of those engaged in this branch of business and the provision of a body with whom the journeymen can confer. The new body has already been successful in arriving at a satisfactory arrangement with the journeymen, fixing a rate of wages, the hours constituting a day and the payment for overtime. Already most of the largest shops in New York City, Brooklyn and Jersey City have become members of the organization, and the Advisory Committee are engaged upon the work of informing those who have not joined the organization of its object for the purpose of securing their membership. The officers are as follows:

President, Charles Roos.
Vice-President, A. F. Trageser.
Treasurer, William S. Flynn.
Secretary, Charles W. Woodward.

The Advisory Committee is composed of Charles A. Roos and P. H. Carney of New York, T. J. Daudt, Jersey City, and Frank E. Clarke of Brooklyn.

The Buffalo Improved Ventilator.

During their quarter of a century of experience in the heating and ventilating of buildings of all classes the Buffalo Forge Company of Buffalo, N. Y., have become thoroughly in touch with the conditions which make stationary ventilators an efficient and serviceable help. Their value when in use with the fan system is too often underestimated. In certain cases they are alone amply sufficient for proper ventilation. While the requirements of a stationary ventilator are hard to fulfill, they have been met by the new Buffalo improved ventilator, which the company recently placed upon the market. These ventilators provide a free exit for the impure air in the building, but effectually retard and prevent the air from re-entering the building through the ventilator.



The Buffalo Improved Ventilator.

With the movement of air across the head of the ventilator there is a suction produced which actually draws the air from the room. This sucking action is obtained because of the shape and construction of the ventilator head.

These ventilators are built of heavy galvanized iron and will resist any reasonable strain that may come upon them. They are perfectly silent in their work and do not require the expenditure of available power, which in some instances means a considerable outlay of money each week. Many buildings need both light and ventilation. Where such conditions are met with the ventilator is specially constructed with a glass top head. It loses none of its good qualities as a ventilator, but has the additional quality of supplying light. These special ventilators may be constructed either of copper, brass or steel plate, or they may be made of the regular material and lined with pure lead to protect the ventilator when used to exhaust obnoxious gases or other injurious fumes.

These ventilators are also used to prevent down drafts and smoky chimneys. The usual method of applying these ventilators to a chimney is with the outside flange, which forms a splendid protection for the top of the chimney. It is a rigid and desirable method of fastening.

The Jackson Iron & Tin Plate Company, Clarksburg, W. Va., have filed a deed of trust covering all their property to Willard F. Snyder and John W. Davis, as trustees, to secure bonds for $125,000 for working capital and for the purpose of making certain new improvements. The erection of the company's plant is proceeding rapidly, and it will be ready for business in a few weeks.

THE AMALGAMATED ASSOCIATION.

At the meeting of the convention of the Amalgamated Association in Wheeling, W. Va., on Monday, the entire wage scale, as reported by the Wage Committee, was ratified with a few very slight alterations. The consideration of the report is said to have been harmonious and it is the first time in the history of the association that this important matter was disposed of in one day. This is claimed to demonstrate that the action of President Shaffer in coming to an advance agreement with the American Tin Plate Company, the American Sheet Steel Company and the Republic Iron & Steel Company was acceptable to the great majority of the delegates. The ratification of the scales is regarded as a distinct victory for President Shaffer and his policy. The new wage scales as ratified are practically the same as those effective last year. They will be in force until July 1, 1903. No conference with the manufacturers will be necessary after the convention. The scale with the independent mills will be signed by the various district vice-presidents of the association.

On Tuesday the convention, with a few dissenting voices, indorsed the annual report of President Shaffer, which contained a detailed history and defence of last year's strike. The reports of the various officers were also approved, after which the convention went into executive session. No further report of its proceedings has been given out up to the time of going to press. It is understood, however, that a prolonged discussion was held on the report of the Committee on Constitution and General Laws, the subject of a change in the present system of assessments being, apparently, the most important feature discussed.

On Thursday the convention re-elected Theodore J. Shaffer as president, together with the other National officers. Assistant Secretary M. F. Tighe, who was spoken of as a candidate for the presidency, declined the honor, preferring re-election to his former position.

Milwaukee Corrugating Company's New Catalogue.

The Milwaukee Corrugating Company, Milwaukee, Wis., who have just established a new factory, have issued their first annual catalogue. This publication, unlike the first attempt of most manufacturers, is an exceedingly creditable presentation of the products which the company are placing on the market. It comprises over 200 pages, its illustrations are exceptionally fine and the variety of the contents is unusually large. The catalogue is divided into three parts. The first part covers eaves trough, conductor pipe, eaves trough hangers, valleys, ridge coverings, cut offs, crestings, roofing plates, bright plates, coke plates and continuous roofing tin. The second part treats of cornices, letters, gable ornaments, window and door caps, hip caps, ceilings, cresting blocks and finials, galvanized iron skylights, ornamental conductor heads, &c. The third part relates to steel roofing in all styles, corrugated weather board, siding, iron doors and shutters, metal shingles, roof paints, &c. It will thus be observed that this catalogue covers a wide range of products for the use of roofers, cornice makers and others who use sheet metal in the construction or decoration of buildings. The company's manager is Louis Kuehn, who had long experience in the same branch of business at La Crosse, Wis. Mr. Kuehn is president and treasurer of the new company, J. J. Heggy is vice-president and William P. Jahn is secretary.

Sheet Metal Machinery Catalogue.

The Cincinnati Punch & Shear Company, Cincinnati, Ohio, have issued from the press a 48-page illustrated catalogue of their metal working machinery. The company, who are successors to the Wais & Roos Punch & Shear Company, make a long line of punching machines, coping machines, multiple punches, shears, bending and straightening rolls, sheet crimpers and rolling mill and tin mill machinery. Their bending machines are made from the smallest to the largest sizes and from the shortest to the deepest throats. They are furnished either single or double throat and for belt, engine or motor driven power. The present catalogue shows 25 varieties of punching machines, also geared power punch shears, specially constructed for range and furnace makers. The company also build a variety of plate, pack and sheet shears to shear from the lightest gauge sheet up to a plate 1-inch thick, and from 36 inches up to 10 feet wide. Bending rolls, doublers, straighteners and crimping rolls occupy the last pages of the catalogue.

An illustration shows the company's new combined tin plate shear and doubler, which has lately been introduced to the trade. This machine is compact and requires a minimum of floor space. It has the engine and gearing above out of the way, so that no sand or dirt can get into the working parts. The shear and doubler may be operated together or independently of each other. The shear is 36 inches wide and is adapted to cut backs and trim plates. The doubler is driven by a crank from the same shaft that operates the shear. It has an opening 28 inches wide and about 8 inches lift. The Cincinnati Punch & Shear Company will gladly furnish a copy of this catalogue, on request, to any who are interested in the machines.

THE ROOFING SLATE TRADE.

John Galt & Sons, manufacturers and dealers in roofing slate, 253 Broadway, New York, report the market for this product much more active than for a long time past. The demand from all parts of the country is of unusually large valume, while the available stocks at quarries are phenomenonally light. Owing to a number of untoward conditions in the past winter, the mining of slate was interrupted to a wider extent than usual, and some of the quarries are only now getting into full work again. As the stocks in hand at the close of last season were by no means large, the result has been a distinct shortage at the present time in the supply of certain kinds of roofing slate. All the quarries are reported to be from three weeks to three months behind on their orders, and consumers, in some cases, are becoming inconvenienced through inability to obtain supplies.

In the Central West a number of buildings, which were started in the fall and work on which was stopped during the winter months, are now reaching the roofing stage, and as a large proportion of buildings in that district are roofed with slate, the demand from that quarter is especially pressing. The large bulk of roofing slate is used in the Central and Central Western States, but an increased demand for slates for roofing purposes is also noted in the Eastern part of the country. The outlook indicates a very large increase in the consumption of this material during the present year, which promises to overtax the facilities of the manufacturers. Already orders are in hand which will entirely absorb the output of some of the quarries for the present year. Prices, in consequence, have stiffened materially and rule considerably higher than at this time last year. It is expected that a further advance will be made by July 1. Under the conditions above outlined it is not surprising to find that the exports of roofing slate have fallen off to an almost insignificant point. This is caused not so much by a lack of demand from abroad, but from the fact that practically the whole of this year's output of American roofing slate will be required at home.

FLASHINGS.

The officers of the new Vulcan Detinning Company, incorporated last week under the laws of the State of New Jersey with a capital of $3,500,000, are: President, Joseph B. Bloomingdale; vice-president, Steven Ginna; secretary, Meyer Hecht, and general manager, Adolph Kern. As stated in our last week's issue, the new company have acquired the plants of the Vulcan Metal Refining Company, at Sewaren, N. J., and the Vulcan Western Company, at Streator, Ill. The capital of the company will be divided into $1,500,000 of 7 per cent. preferred stock and $2,000,000 common stock.

The Southern Metal Company, Orangeburg, S. C., who were incorporated and began business on February 15 last, are now manufacturing tin goods and a general line of sheet metal work. The company's factory is equipped to manufacture Cornices, Skylights and a patent Eaves Trough Hanger, the invention of their manager, J. B. Outland, and they are also preparing to manufacture Steel Ceilings. They are having four sizes of dies made by the E. W. Bliss Company of Brooklyn, N. Y., for the manufacture of the Seeder Cups which accompany the Hoffman Universal Seeder, of which they are the sole manufacturers. The company report having met with a good business since their start. Among the recent contracts booked is one for 3000 of the Hoffman Universal Seeders. The company are prepared to undertake all kinds of special work in sheet metals, also light wrought iron work. The officers of the concern are Dr. W. S. Barton, president; Dr. D. Hydrick, secretary and treasurer, and J. B. Outland, manager.

The Niles Iron & Steel Roofing Company, Niles, Ohio, will remove their plant from its present location to a site adjoining the plant of the Niles Mine & Mill Supply Company. The company will be provided with a considerable extension of capacity at their new location. A one-story building, 72 x 200 feet, is being constructed and will be ready for occupation within 90 days.

Herman Blevins of New Castle, Pa., has severed his connection with the American Tin Plate Company and will have charge of the electrical machinery at the New Castle Stamping Company's works, New Castle, Pa.

G. Bickelhaupt's Skylight Works, 243-245 West Forty-seventh street, New York City, are distributing a folder calling attention to the patent Automatic Self-locking Scuttle Opener which they manufacture. This Opener is made of wrought and malleable iron, in such a way as not to get out of order, and can be placed on skylights already in position without requiring any alterations. The Skylight Opener is referred to as safe and as affording a means of quick escape in case of fire.

The engine room and pickling department of the Monongahela Works of the American Tin Plate Company, at Pittsburgh, Pa., were recently damaged by fire to the extent of $5000.

The Marietta Sheet & Tin Plate Company of Marietta, Ohio, have awarded the contract for the erection of their sheet mills to the Wheeling Mold & Foundry Company of Wheeling, W. Va. The contract calls for four hot and four cold mills and six shears. At a meeting of the company, held at Marietta last week, the following officers were elected: President, J. M. Ickes; secretary, L. C. Taylor; treasurer, R. Park; superintendent, D. Lewis, and engineer, E. E. Erikson of Pittsburgh.

The American Sheet Steel Company have placed an order with the Bass Foundry & Machine Company of Fort Wayne, Ind., for a 30 x 48 heavy duty rolling mill engine for their plant at McKeesport, Pa. The Bass Company are also building a cross compound condensing Corliss engine for the Laughlin Works of the American Tin Plate Company, at Martin's Ferry, Ohio.

Beyer Bros. Company of Philadelphia have prepared an attractive catalogue and price-list covering their Tinners' and Roofers' Supplies.

W. C. Dickey left the New York office of the Cambria Steel Company on May 1 to assume the duties as secretary of the Maryland Sheet & Steel Company of Cumberland, Md. He will be the Eastern sales agent of the company, with headquarters at 1133 Broadway. The company produce Blue Annealed Open Hearth Sheets from Nos. 7 to 20 gauge, Harrow Disks and Circles.

The report that two more Sheet mills will be built at the Falcon Works of the American Sheet Steel Company, at Niles. Ohio, is untrue. No additions are contemplated at this plant for the present.

The offices of F. H. Phillips & Sons Company, Sheet and Tin Mills, Chilled Rolls, &c., have been removed from the Schmidt Building to room 721 Park Building, Pittsburgh. The office is under the charge of F. Rees Phillips.

The new Sheet plant of the Ashland Sheet Mill Company, Incorporated, at Ashland, Ky., manufacturers of Black and Galvanized Iron and Steel Sheets, is now in full operation and started off in splendid shape. The main building is 420 feet long and 100 feet wide. The plant contains six Sheet mills, six pair and six annealing furnaces. I. A. Kelly is president, T. J. McCullough, vice-president; L. R. Putnam, secretary and Geo. McCullough, treasurer.

The New Doty Mfg. Company, Janesville, Wis., have orders on their books for a large amount of business in Punches, Shears and Rolls, all that they can do for some months ahead. Inquiries are numerous and there is every indication of a continued good business for the balance of the year or even longer. The only trouble is to get out goods soon enough to please customers. They are about to begin work on some extensions to their plant, a pattern storage room, 30 x 70 feet, three stories high, a new pattern shop and an extension to their machine shop of about 60 x 70 feet.

The Van Noorden Company, Boston, Mass., have issued a pamphlet devoted to illustrations of the constructive features of their Metal Skylights, in connection with a description of their points of excellence.

The Gerock Bros. Mfg. Company, 1252 Manchester avenue, St. Louis, have just made of sheet copper a large eagle, measuring 15 feet from tip to tip of wings, which is intended to adorn the Mississippi State Building at Jackson, Miss. Its perch is to be a distance of 200 feet from the ground, but its generous proportions will make it plainly and prominently obserable from a considerable distance. The plans were prepared by the State supervising architect. In addition to this special work the concern are doing a very large business in all departments of Cornice and Ornamental Sheet Metal Work, and have recently found it necessary to enlarge their plant and add additional machinery.

W. S. Baertich proprietor of the Eagle Cornice Works, Fort Worth, Texas, informs us that he is in the market for supplies from jobbers and especially dealers in Furnaces.

H. Weiss & Co., 25 Cliff street, New York, report more activity in the movement of Tools for tin roofers and cornicemen. They make a specialty of all kinds of Tin and Sheet Metal Working Tools and Machinery, which they carry in stock and are prepared to ship promptly.

Employees in the plants of the American Can Company in Boston, Mass., to the number of over 300, struck work this week over a question of the hours of labor.

The extensive Sheet plant of Zug & Co., Limited, Pittsburgh, Pa., has been running full in all departments for some time past, with every prospect of an indefinite continuance of present activity.

John F. Murphy, who for the past four years has looked after the Ohio business of the Follansbee Brothers Company, with headquarters at Columbus, Ohio, has been appointed manager of their Philadelphia office, covering the territory of New Jersey, Eastern Pennsylvania, Delaware, Virginia, Maryland, Vermont and a portion of New York State.

The Provident Slate Company, Slatington, Pa., have sent out to the trade, under date of April 15, a new price-list on the grades of Roofing Slate which they manufacture. The company state that they have a fair sized stock on hand and are in position to take care of orders for Washington Bangor Slates, but on other grades, such as Old Washington, Standard Washington and Pennsylvania Black, they are sold ahead on many sizes. The company call attention to the fact that they carry a large line of Felt, Nails, Dressers, Tools, Cement and other supplies for Slate roofers.

Follansbee Brothers Company of Pittsburgh, Pa., have awarded the contract for four hot and one cold sheet mills, one roughing mill and four hot and five cold tin mills to the Wheeling Mold & Foundry Company, Wheeling, W. Va. These mills will be installed in the company's new Sheet and Tin Plate works.

The Executive Committee of the National Blast Furnace Workers, embracing blast furnace labor in the Mahoning and Shenango valleys, have decided to extend the date of demanding an eight-hour day to June 1 instead of May 1. It is stated that this demand will be vigorously opposed by the blast furnace operators and it is not believed it will ever go into effect.

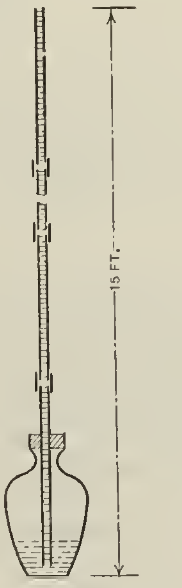
THE LETTER BOX.

Inquiries in regard to practical questions of general interest are invited, in reply to which we shall be glad to receive suggestions and information from our readers.

Correspondents are requested in all cases to give their names and addresses, which will not, however, be published or disclosed without their consent.

WHAT MAKES THE TORCH BLOW?

From Curiosity, Philadelphia, Pa.—I thank *The Metal Worker* and "B. McK." for the reply concerning blowing of torches, which was as close to the actual facts as it is possible to get. I found that the heat of the human hand on the torches caused the gas or air in the upper portion of the torch to expand to such an extent that the alcohol was driven up through the wick. The smaller the space in the torch the greater the expansion. It may interest your readers to learn that, in experimenting on the expansion of air by the heat of the human hand, I made a pint flask air tight and placed a small glass tube through the cork, after placing water in the flask to the depth of an inch. The glass tube was extended to a hight of 15 feet above the flask. I found no trouble in forcing the water that hight by the heat of the hands on the outside of the flask. A few drops of red ink in the water makes it more easy to follow in the glass tube.



THE METAL WORKER

What Makes the Torch Blow?

A DISPUTED BILL

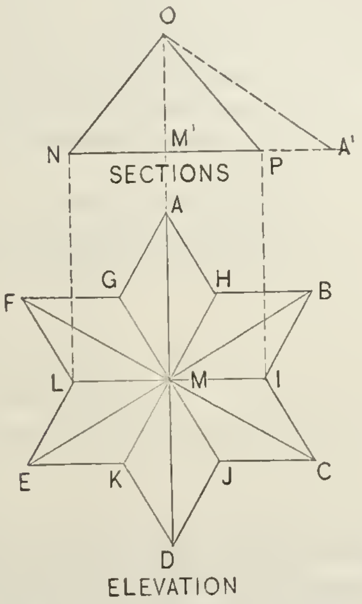
From T. M., Philadelphia, Pa.—Having read the communication of "J. B." in *The Metal Worker* of April 26, I am of the opinion that "J. B." should be paid for his work. If he can establish the facts in a court, there is no doubt that he could collect, but I would advise him to avoid spending any money in the courts and rather make some concessions to settle the matter outside. I hope many of the readers of *The Metal Worker* will read his letter carefully, and note how easy it is to get into trouble by not being very careful to note down orders in detail, so as to avoid just such complications. People who are the easiest to get along with and who give a general order in a careless fashion are the people who make you the most trouble when things go different from what they expect. It is better to be overcareful in every instance. Men who guide the affairs of large institutions are those who are the most careful over the smallest things.

From J. S., Chicago, Ill.—Having read the letter of 'J. B." in *The Metal Worker* of April 26, I first must express my regret at the unfortunate condition in which he finds himself, and which overtakes the best people on some occasions. If "J. B." can establish the fact that the order was given for a hood 6 feet 6 inches in diameter on the outside for a smoke stack 30 5-16 inches in diameter and that such a hood was made and delivered, it would seem to me that the only man to blame is the one who gave the order, in not ordering what he wanted, or explaining the conditions to be met. Consequently "J. B." ought not to be expected to make changes at his own expense. The original bill should be paid, as should also the expense of any changes that may be necessary to make the hood satisfactory.

PATTERN FOR A SIX-POINTED STAR.

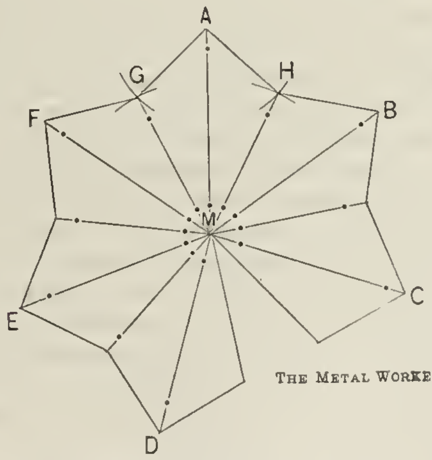
From J. O., New York.—Will you please tell me through *The Metal Worker* how to lay out the pattern for a six-pointed star?

Answer.—In Fig. 1 is shown a reproduction of our correspondent's sketch, in which A B C D E F G is the elevation and N O P the true section on the line L I in the elevation. A true section will also be necessary on the line M A in the elevation. Take the distance M A and place it as shown from M^1 to A^1, and draw a line from A^1 to O, which is the true length on M A in elevation. For the pattern proceed as follows: Draw any line on Fig. 2, as A M, equal to A^1 O in Fig. 1. Now with radii equal to A G or A H and with A in Fig. 2 as a center describe the arcs G and H. Then with O P in Fig. 1 as radius and M in Fig. 2 as center intersect the arcs G and H at G and H. Draw lines from M to G to A to H to M, which will be the pattern for one point of the star. If the pattern is desired in one piece join six of these points, as shown by D E F A B C, and bend on the lines shown to fit the outline in elevation.



THE METAL WORKER

Pattern for a Six-Pointed Star.—Fig. 1.—Elevation and Sections.



THE METAL WORKER

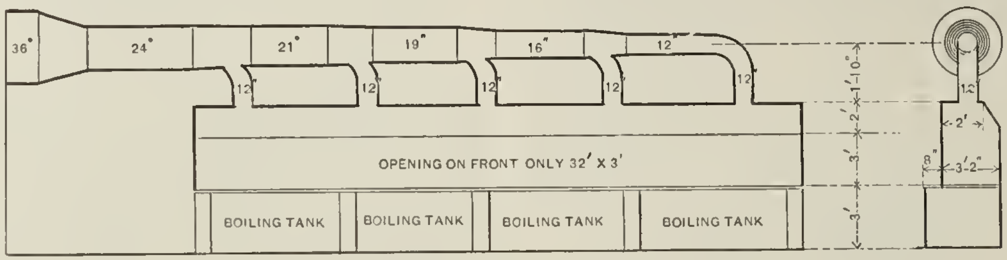
Fig. 2.—The Pattern Shape.

CAN RUSTY CANS BE SOLDERED?

From M. J. S. & Co., Houston, Texas.—We would be glad to have some of the readers of *The Metal Worker* describe their method of cleaning and soldering rusty iron ice cans.

REMOVING STEAM BY FAN.

From J. M., Canandaigua, N. Y.—I notice the sketch and letter of "J. W. N." in *The Metal Worker* of April 12 and inclose a sketch showing my method of removing steam from boiling vats. I have had considerable experience in the work of removing steam from tanks of boiling water, potash and acid, and have secured success every time. I have seen a great many failures, as the rising steam does not go where you want it to go, but where you make it go. As the sketch may need some explanation, I give the following: If the boiling liquids are not acid, the hood and pipes may be made of galvanized iron, using No. 20 iron for the hood and No. 24 iron for the pipes, which should be well riveted and soldered. Where the work will permit it the opening should be on the front side of the tanks only, and the hood should not only be strengthened up the back, but also on the front edge at the bottom, with 1-inch angle iron. If acid is to be used in any of the tanks the hood and pipe should be made of wood. It will be noticed, in the elevation I present, that the front of the hood sets back 8 inches from the front of the tank, so that the workman may more easily reach his work without any hindrance. If the hood has one opening on the front there would be draft enough through the front to remove the steam, as all the air handled by the fan will have to pass through the space. Some benefit will be derived if it is possible to reduce the hight of the opening from the 3 feet to just enough hight to allow the largest work to pass through easily. It will be seen that I use five 12-inch pipes in place of six, instead of arranging the sizes of the pipe as "J. W. N." has done. The area of a 24-inch pipe is of sufficient capacity to take care of 5.7 12-inch pipes, and the pressure will be the same at each opening, so I use five pipes instead of six pipes. The elbows connecting the branches into the main would have not less than a 12-inch radius on their shorter side, and the main should be increased in size as the branches connect into it.



THE METAL WORKER

Removing Steam by Fan.

If the plan I suggest is followed I am positive that "J. W. N." will have nothing to change, and the result will be in every way satisfactory. He does not make it clear whether he uses a disk fan or an exhaust fan. If a 36-inch disk fan is run at the speed he mentions it will do the work and at a small expenditure of power—about 3 horse-power—but an exhaust fan would use two or three times as much power without giving any better results, as it is a volume of steam laden air that has to be moved, and not a small quantity at a high velocity, and the disk fan is better adapted to the work. I hope "J. W. N." will think favorably of this layout, and if he adopts it I shall be pleased to hear from him and to make anything more clear that he does not understand from my letter. I think many readers of *The Metal Worker* will be glad to learn what success attends his efforts, whatever plan he may follow.

WHAT WILL REMOVE THE SOOT?

From Detroit Heating & Lighting Company, Detroit, Mich.—In reply to the inquiry of "C. H. R.," in *The Metal Worker* of April 26, as to how to remove sticky substance from the surfaces of his heater, we would suggest that if he will get up a good hot coal fire, and when the coals are bright take a handful or two of zinc chips and a like quantity of sulphur, scattering these over the top of the coals, and closing the heater and leaving the damper in the smoke pipe partly open, letting it burn a while, he will find that the substance will scale off the heater,

WHO MAKES THE BOSTON GAS RANGE?

From M. Thompson, 88 Remsen street, Cohoes, N. Y.—I should be glad to learn who makes a two burner gas range called the Boston.

Chapman Forges and Emery Grinding Machine.

H. L. Chapman, Marcellus, Mich., is taking special measures to bring the Chapman portable forges before the trade. These forges are classified under numbers. No. 1, with hood, is designed for heavy smithing; No. 2, with shield, for outdoor work, and No. 3 forge, with hood, for 7-inch pipe. A strong point in favor of these forges is claimed to be their extreme simplicity of construction, compact form, great strength and durability. The manufacturer is so confident of the product that he guarantees the forge to work and to be equal in every respect to representations made in his trade circular, and should any piece prove defective in material or workmanship it will be duplicated within one year from date of sale. Mr. Chapman has also issued a circular setting forth the merits of the Chapman foot power emery grinding machine. The aim of the manufacturer is to make a light machine yet strong, durable and thoroughly practical in the hands of the ordinary mechanic. The new machine was thoroughly tested before being put upon the market. The size of the machine on the floor is 16 x 24 inches; hight to top of table, 38 inches. The table is of hard wood, 15 x 22 inches. The frame is of cast iron, well braced; the fly wheel is 19½ inches in diameter, carries 1¼-inch belt, weighs nearly 40 pounds and makes from 200 to 250 turns per minute, giving a strong, steady motion. Weight of machine complete with head is about 120 pounds; shipping weight crated, 130 pounds.

What is claimed to be the largest anchor ever forged has recently been turned out at the Government forging shop, at the United States Navy Yard, Charleston, S. C. It weighs 26,500 pounds and the cost of the material and construction was nearly $2000. The great anchor is to form part of the equipment of one of the new United States battle ships. The forging of this anchor was somewhat of an experiment, as it was doubted whether an anchor of such a size could be forged. Many large anchors have been made of cast steel, which are now in use in some of the war vessels of the United States and British navies; but cast steel is always liable to fracture and it was desired that an anchor should be provided that, while of no greater weight than the cast steel, would be tougher and less liable to breakage. The result of the experiment has been entirely successful. The production of the anchor took the work of five men for over a month in hammering, smelting and welding.

According to the statistics of the American Iron & Steel Association the production of steel wire nails in the United States in 1901 amounted to 9,803,822 kegs of 100 pounds, as compared with 7,233,979 kegs in 1900, an increase of 2,569,843 kegs, or over 35 per cent. In 1899 the production amounted to 7,618,130 kegs, in 1898 to 7,418,475 kegs, in 1897 to 8,997,245 kegs, in 1896 to 4,719,860 kegs, and in 1895 to 5,841,403 kegs. The wire nails produced in 1901 were manufactured by 61 works, as compared with 56 in 1900. The production in 1901 was greatly in excess of that of any other year, exceeding by 906.577 kegs that of 1897, the next year of largest production.

TRADE REPORT.

MARKET SUMMARY.

Pig Tin is about ½c. higher in price, but quiet.

Copper is dull and weak.

Pig Lead is quiet and firm.

Spelter is about 1-10c. higher and quiet.

Antimony is unchanged.

Nickel is active and without change.

Aluminum is firm and in good demand.

Tin Plates are quiet, with prices unchanged and firm.

Sheets continue in heavy demand: prices strong, with upward tendency.

Old Metals are quiet and weaker, especially Scrap Brass and Copper.

Foundry Iron is still very scarce, with prices high and little doing for lack of supply.

Sheet Copper is in good demand, with prices firm.

Sheet Zinc is without change.

Hardware is moving in good volume and prices remain strong.

Plumbers' Supplies are active, with prices firm in all lines.

Galvanized Range Boiler prices have been withdrawn and an early advance is looked for.

Cast and Malleable Iron Steam Fittings are likely to advance 10 per cent. in price.

Copper Boilers, Sinks, &c., are expected to show an advance at early date.

Roofing Slates were advanced in price April 25.

Sad Irons have been marked up ⅛c. a lb.

Wire Nails are firm and in good demand.

Cut Nails are moving in large volume at firm prices.

Window Glass has been advanced in price by jobbers.

White Lead is in active demand; prices are unchanged.

Linseed Oil is quiet and firm.

Spirits Turpentine is firm and fairly active.

Old Rubber is quiet and without change.

METAL MARKET.

New York, May 2, 1902.

Pig Tin.—After considerable fluctuation, prices of Tin are again on a higher level, the market this week having reached the highest point since the decline which set in two weeks ago. At the close the market, although quiet, was strong. Jobbers quote Straits Pig in small lots at 29½c. to 30c. per lb. The statistics for the month of April were regarded as favorable to the maintenance of the present high level of prices. The total arrivals at Atlantic ports during the month were large, aggregating 3834 tons. Deliveries into consumption for the month were the heaviest on record, amounting to 3300 tons, and the stock on April 30 was 2990 tons, with 4310 tons afloat for the United States. The total visible supply decreased 2535 tons, being 15,596 tons on April 30, as compared with 18,131 tons at the beginning of the month.

Copper.—The market was very weak during the greater part of the week, but a somewhat firmer tone was developed at the close. Business throughout the week was light and prices showed a gradual decline. The exports for April amounted to 16,275 tons, making a total of 65,765 tons for the first four months of the year, as against 28,587 tons for the corresponding period of last year. Lake Ingot, in small lots, is quoted at about 13c. to 13½c. per lb., and Casting Copper at 12¾c. to 13c.

Sheet Copper.—The demand for Sheet Copper is reported to continue in good volume. While consumers are buying mainly for present requirements, the volume of orders is large and sufficient to absorb the current output of the mills. Prices are firm on the basis of 18c. per lb. for Sheet Copper from store.

Pig Lead.—This market is without change and devoid of any interesting feature. The demand is quiet and prices are steadily held, American Pig in small lots being quoted at 4.45c. to 4½c. per lb. St. Louis advices are to the effect that a firmer undertone rules in the Lead market at that center, but trading is on a light scale.

Spelter.—Prices are firm, but consumers are still buying in small quantities. Jobbers' prices are a shade higher, small lots of Western Spelter being quoted at 4.65c. to 4.75c. per lb. St. Louis advices report little change in the Spelter market at that point. Transactions continue on a light scale and prices rule at the level of a week ago.

Sheet Zinc.—A fair demand for Sheet Zinc is reported, with prices unchanged at 6¾c. per lb. for 600-lb. cask lots and 7c. to 7¼c. for smaller quantities.

Antimony.—The market for this metal is unchanged. Hallett's in small parcels is quoted at 8⅝c. to 8¾c. per lb., United States at 8⅜c. to 8½c., and Cookson's at 10¼c. to 10¾c.

Nickel.—The situation is unchanged. Small lots are quoted at about 55c. per lb.

Aluminum.—The demand continues good and prices are without change. Small lots of No. 1 Ingot guaranteed 99 per cent. pure are quoted at 37c. per lb. and 100-lb. lots at 35c.

Tin Plates.—The Tin Plate market is entirely unchanged and remains quiet and uninteresting. We hear of no new business of any amount, but deliveries from mills are going on in large volume on contracts placed sometime back. Retail business is merely fair, but is expected to recover its activity by reason of the improvement in weather conditions. Prices are firm and without change. American Bessemer Coke Plates, IC, 14 x 20, are quoted at about $4.85 to $4.95 per box for moderate sized lots, delivered at New York or corresponding points. An advance of 1½ pence, to 13 shillings 7½ pence, on the price of Welsh plates was reported this week.

Sheets.—The Sheet market continues in a very satisfactory condition, the demand being heavy for both Black and Galvanized Sheets and prices ruling very firm. The mills are fully employed and a good deal of pressure for delivery is noted. Stocks both at mills and in store are at a low point and practically everything that is made passes into consumers' hands without delay. The demand is heaviest for Galvanized Sheets and Black Sheets of the heavier gauges. Jobbers' prices remain firm, No. 27 One Pass Cold Rolled Soft Steel Sheets being quoted at about 3.85c. to 3.90c. No. 24 Galvanized Sheets are quoted at 4c. to 4.20c. for small quantities, equal to 70 to 70 and 2½ per cent. off the list. The practice of quoting net prices for Galvanized Sheets has not become universal among the Eastern jobbers, but they are gradually working toward that point.

Chicago advices are as follows: The demand for Sheets has continued active and even urgent, but as a rule only small sales have been made because of the inability of mills to accept large orders for delivery within several months. Small lots of No. 27 Black Sheets from store are quoted at 3.45c. to 3.55c. Galvanized Sheets are quoted at net prices, small lots from store ruling at 4.70c. to 4.75c. for No. 27.

Old Metals.—The market is rather quiet. Supplies are increasing and the demand is not so urgent, with the result that prices have eased somewhat. Dealers are paying about the following rates for moderate sized lots, delivered at New York or corresponding points:

Heavy Copper	per lb.	9¾c.
Light and Tinned Copper	per lb.	8¾c.

Heavy Brass	per lb. 8 c.
Light Brass	per lb. 6¼c.
Lead	per lb. 3⅝c.
Tea Lead	per lb. 3¼c.
Zinc	per lb. 2⅞c.
Pure Aluminum Sheet	per lb. 25 c.
Cast Aluminum	per lb. 20 c.
No. 1 Pewter	per lb. 16 c.
No. 2 Pewter	per lb. 8½c.
Tin Plate Scrap, per gross ton	.... to $5.00
Wrought Iron Scrap, per gross ton	$13.00 to 13.50
Heavy Cast Scrap, per gross ton	12.00 to 12.50
Stove Plate Scrap, per gross ton	8.50 to 9.00
Burnt Iron, per gross ton	7.00 to 7.25

THE PIG IRON MARKET.

New York.—Current business is confined almost entirely to small lots for prompt delivery, to meet urgent necessities. For these fancy prices are being asked and paid. We quote, for summer delivery, Northern Iron, at tidewater, No. 1 X, nominal, $21.50 to $22; No. 2X, $19.50 to $20; No. 2 Plain, $19 to $19.50; Tennessee and Alabama brands are as follows: No. 1 Foundry, $19.50 to $20.50; No. 2 Foundry, $18.75 to $19.25; No. 3 Foundry, $17.75 to $18.25.

Chicago.—The volume of business in Pig Iron has been relatively small, while there has continued to be an active, if not an urgent, demand for carloads for immediate or nearby deliveries. Sellers of local Foundry Iron have demanded and obtained a further advance of 50c. per ton, while Lake Superior Charcoal has been sold at $1 a ton above previous current prices. Southern Coke Iron continues strong, the advance of a week ago having been fully maintained. We quote as follows:

Lake Superior Charcoal	$22.50 to $23.25
Local Coke Foundry, No. 1	20.00 to 20.50
Local Coke Foundry, No. 2	19.50 to 20.00
Local Coke Foundry, No. 3	19.00 to 19.50
Local Scotch, No. 1	19.50 to 20.00
Ohio Strong Softeners, No. 1	22.10 to 22.35
Southern Silvery, according to Silicon	19.90 to 20.40
Southern Coke, No. 1	19.40 to 19.90
Southern Coke, No. 2	18.65 to 19.15
Southern Coke, No. 3	18.15 to 18.65
Southern Coke, No. 1 Soft	19.40 to 19.90
Southern Coke, No. 2 Soft	18.65 to 19.15

Philadelphia.—Business is not on a large scale, for the reason that the great bulk of requirements are already provided for, and moreover there is little or nothing for sale. The difference in prices between 60 and 90 days' deliveries and three to six months' deliveries is gradually fading out of sight and present appearances give little hope for lower prices for some months to come. Prices are practically the same as last week. The market is irregular and uncertain, each transaction being based on the circumstance at the time of delivery, character of Iron, &c. But on the average, business prices are virtually unchanged, as follows, for Philadelphia and nearby points:

No. 1 X Foundry	$20.50 to $21.50
No. 2 X Foundry	19.75 to 20.50
No. 2 Plain	19.25 to 19.75

Pittsburgh.—There is very little Pig Iron to be had and sellers who have any to spare can get almost any prices they ask. No. 2 Foundry Iron is selling at $20.50 to $21, Pittsburgh. Up to $20 a ton is being offered for Bessemer Iron for shipment over the last six months of this year and it is intimated that even $21 may be done.

Cincinnati.—The market is not active, simply because there is practically no standard Iron offering. There still seems to be a shortage on almost all grades for delivery during the next 60 days. What is in reserve for delivery for July 1 is not known. Some little Southern Iron has been sold as high as $16, Birmingham, for No. 2, but the range of $15 to $15.50 about covers the actual price-list. We quote f.o.b. Cincinnati as follows:

Southern Coke, No. 1	$18.25 to $18.75
Southern Coke, No. 2	17.75 to 18.25
Southern Coke, No. 3	17.25 to 17.75
Southern Coke, No. 4	16.75 to 17.25
Southern Coke, No. 1 Soft	18.25 to 18.75
Southern Coke, No. 2 Soft	17.75 to 18.25
Southern Coke, Gray Forge	16.75 to 17.25
Southern Coke, Mottled	16.75 to 17.25
Ohio Silvery, No. 1	20.85 to 21.35
Ohio Silvery, No. 2	20.35 to 20.85
Lake Superior Coke, No. 1	21.35 to 22.35
Lake Superior Coke, No. 2	20.35 to 21.35
Lake Superior Coke, No. 3	19.35 to 20.35

St. Louis.—A continuance of the quiet condition in the Pig Iron market at this point was manifest for the past week, while the interests here are in no position at the present moment to supply any considerable demand, there seems to be no serious nervousness on the part of the larger buyers, which gives the impression that their needs are well covered for some months to come. High prices rule for all the Iron available for immediate delivery, but as the demand and inquiry are on a very low scale the market is apt to undergo no severe test for a few weeks.

Southern, No. 1 Fouudry	$19.25 to $19.50
Southern, No. 2 Foundry	18.50 to 18.75
Southern, No. 3 Foundry	18.00 to 18.25
Southern, No. 4 Foundry	17.50 to 17.75
No. 1 Soft	19.00 to 19.25
No. 2 Soft	18.50 to 18.75

CHICAGO REPORT.

Scrap Iron and Steel.—There are freer offerings, but with a fair demand the market continues firm and prices are unchanged, with the exception of Cast Borings, which are a little firmer and 50c. per ton higher. We quote dealers' buying prices for carload lots, Chicago delivery, as follows:

	Per net ton.
Country Wrought Scrap	$14.00 to $14.50
Machinery Cast	.... to 13.00
Malleable Cast	12.00 to 12.50
Stove Plate (free from burnt)	10.00 to 10.50
Burnt Iron and Grate Bars	8.00 to 9.00
Sheet Iron and Hoops	8.00 to 9.00
Plow Steel	12.00 to 13.00
Breaking Stock	.... to 11.00
Old Boilers—whole (Iron)	9.50 to 10.00
Old Boilers (Iron) cut in single Sheets and Rings	12.00 to 12.50
Old Gas Pipe and Boiler Tubes	12.00 to 12.50
Cast Borings	7.50 to 8.50
Turnings	11.50 to 12.00
Horseshoes	14.00 to 14.50

Old Metals.—The tone of the market for Copper Wire is easier, in sympathy with Ingot Copper, but there is a fair demand. Heavy Copper Wire is tending downward, but other Copper and Brass Material is well sustained. Tin Foil and Pewter No. 1 are a little firmer in tone and prices are fractionally higher.

	Per lb.
Copper Wire and Heavy	10½ to 10¾c.
Copper Bottoms	9¾c.
Copper Clips	10½c.
Red Brass	11 c.
Yellow Brass	8¼c.
Red Brass Borings	10 c.
Yellow Brass Borings	7¼c.
Light Brass	6½c.
Pipe Lead	3.70c.
Tea Lead	3.35c.
Zinc	3 c.
Tin Foil	21 c.
Pewter, No. 1	17½c.
Pewter, No. 2	10 c.
Aluminum	20 c.

Old Rubber.—There is but little trading, but the offerings are not pressing and the market, in general, remains steady, while Rubber Shoes have been slightly advanced. Outside Tubing is fractionally lower. The market continues easy with free offerings and a moderate demand, but prices are sustained as previously quoted.

	Per net ton.	Per lb.
Garden Hose	$25.00	.....
Air Brake Hose	42.00	.....
Rubber Shoes	....	6.85c.
Rubber Car Springs	....	5 c.
Inside Bicycle Tubing	....	22 c.
Outside Tubing	....	6 c.
Black Rubber	....	4 c.
White Rubber	....	8¼c.

Rags.—Offerings are liberal and the market is easier without any change in prices. Good Country Mixed Rags, Chicago delivery, 70c. to 75c. per 100 lbs. in any quantity.

Anthracite Coal.--There continued to be a good demand up to the first of the month, because of the advance, which took effect May 1. The discount was advanced from 50c. to 40c. on the following schedule for all coal to be shipped in May:

	Grate.	Egg and Stove.
Chicago	$5.75	$6.00
Milwaukee, Wis.	5.75	6.00
St. Louis	6.20	6.45
Kansas City, Mo.	8.25	8.50

The Joseph Dixon Crucible Company of Jersey City, N. J., held their annual stockholders' meeting on April 21, when the following directors were elected: Edward F. C. Young, John A. Walker, William Murray, Joseph S. Bedle, Edward L. Young, George T. Smith and George E. Long. Officers were then elected as follows: President, Edward F. C. Young; vice-president and treasurer, John A. Walker, and secretary, George E. Long. The annual report showed larger sales in 1901 than in any previous year, as well as larger net earnings.

THE HARDWARE TRADE.

This is with the merchants throughout the country a very busy season, and the reports which come from the larger and the smaller houses indicate a very satisfactory condition of business. Stocks generally are well assorted except in the lines in which difficulty in getting goods is experienced. The policy of the trade is evidently to keep assortments up to a good working level. Jobbers and manufacturers accordingly find many orders coming in to them, not a few of which are coupled with the request that immediate shipment be made. Manufacturers for the most part have difficulty in getting out goods as fast as they are desired. This is particularly on account of delay in getting the material. The insufficiency of transportation facilities on the railroads also has some influence. With the great activity which prevails in nearly all factories, labor is not only fully employed, but scarce, and wages are gradually creeping up. The new business coming in from the larger trade is in fair, but not especially heavy, volume. Prices generally are very firm. Several advances are to be noted. Rumors of consolidation of some manufacturing interests are current, but nothing definite is reported in this direction.

NOTES ON PRICES.

Galvanized Range Boilers.—Manufacturers of Galvanized Kitchen Range Boilers have withdrawn prices under date of May 1. It is understood that an advance of 10 per cent. will be announced which will take effect from that date. For some time past reports have been current in the Boiler trade that the stocks of Boilers on hand at the manufacturers' plants were very low. Deliveries of Sheets from mills have been very unsatisfactory, and it was said that if a continued scarcity of Sheets was not broken by prompt shipments an advance in the price would certainly be announced. The withdrawal of prices, as noted above, indicates that this advance is about to take place.

Cast and Malleable Iron Steam Fittings.—The manufacturers of Cast Iron Steam Fittings withdrew all quotations under date of April 29. It is said that the recent advance in the prices of Pig Iron of the higher grades has been responsible for the change in the price of Iron Steam Goods. The prices on Malleable Iron Piece Fittings have also been withdrawn. Up to the present time the manufacturers of this line have not come to any agreement regarding prices, but it is understood in the jobbing trade that prices will advance not less than 10 per cent.

Plumbers' Copper Work.—The manufacturers of Plumbers' Copper Work, such as Copper Boilers, Copper Pantry Sinks and goods of a kindred nature, withdrew all prices under date of April 26. It is claimed that an advance in the prices of Copper Sheets is imminent, and that the manufacturers of Boilers and Sinks are very hard up for raw material, owing to the fact that the demand for this class of goods is much beyond the capacity of the rolling mills. It is understood that new prices showing an advance of a radical nature will be announced within the next few days.

Roofing Slate.—Under date of April 25, John Galt & Sons, 253 Broadway, New York, issue a new price-list of Roofing Slates which cancels all previous lists. The present list, which rules throughout the trade, shows increases of about 25 cents a square in a number of different grades of Pennsylvania, Maine and Vermont Slates. There has been, as yet, no advance in Bangor Slates, the manufacturers in that district having agreed when they issued the last price-list on January 1 to continue it unchanged until June 30, but there will undoubtedly be a sharp increase in the price on July 1. Meanwhile no orders are being accepted for this grade of Slate, except such as can be filled before June 30. In another column we give a review of the Roofing Slate market, which shows the strong position of this material at the present time.

Sad Irons.—The manufacturers of Sad Irons have made another advance of ⅛ cent per pound in the price of these goods, being the second within a month.

Wire Nails.—Conditions in the Wire Nail market have undergone no change. The outlook for local business in New York is satisfactory with a fair demand. Deferred shipments from mills make it difficult for jobbers in some instances to keep their stocks well assorted. Small lots from store are quoted at $2.30 per keg.

Cut Nails.—The demand for Cut Nails is large from the territory tributary to New York. Owing to the difficulty of keeping stocks well assorted the tone of the market is firm. Small lots of Cut Nails from store are quoted at $2.30 per keg, placing Wire and Cut Nails on precisely the same level.

Window Glass.—The National Window Glass Jobbers' Association have advanced the price from store to 89 per cent. discount for all sizes of both double and single strength Glass. Meanwhile there is very little business doing.

White Lead.—The favorable weather has given an opportunity to begin work which has been previously delayed, resulting in a free delivery on contract orders. Indications point to a continued active demand for White Lead in Oil. Prices are quoted at 6½ to 6¾ cents per pound for retail quantities.

Linseed Oil.—There is comparatively little new business doing in Linseed Oil. The large buyers have anticipated an advance in price for the last two or three months and most of them have contracted for enough Oil to carry them until June, if not longer. The further advance in price which seemed probable last week is not likely to take place if the present lack of demand continues. Orders are confined to small lots, retail quotations being 67 to 67½ cents per gallon.

Spirits Turpentine.—The buying at this point is confined to small lots of Turpentine and deliveries are being made to consumers on contract orders. Reports are to the effect that there is a decrease of offerings at the South and a firmer market. Small lots of Turpentine are quoted at 46 to 46½ cents per gallon.

Old Rubber.—The market for Scrap Rubber is not especially active or firm. Dealers in New York and vicinity are paying about the following figures:

Car Springs, ton lots, per lb....................	5 c.
Rubber Shoes, less than carloads, per lb..........	6½c.
White Wringer Rolls, per lb......................	7 c.
Inside Bicycle Tubing, per lb....................	21½c.
Outside Tubing, per lb..........................	6 c.

TRADE NOTES.

The Knecht Brothers Company, Cincinnati, Ohio, have issued a small pamphlet in the interests of the Knecht Friction Sensitive Drill Press, which can be adjusted to variable speeds, without cone pulleys or shifting of belts. An adjustable tension device under the lower cone prevents slipping and every device can be operated from the front part of the machine, so that the operator need not change his position. The machine has a capacity of 9-16 inch and smaller.

It is reported that Shanks & Co. of Memphis, Tenn., have purchased a site at Livingston, Ky., and will erect a Pump factory at that place.

The Southern Brass Company of Lexington, N. C., have been organized with a capital stock of $10,000 for conducting a general Silver, Nickel and Brass Plating business. J. L. Peacock is president; W. K. Finger, vice-president and general manager, and Jas. H. Alexander, secretary and treasurer.

The St. Louis Brass Mfg. Company, St. Louis, Mo., with capital stock of $50,000 have been incorporated by Gustave Plens, Alfred C. Enstein, Edwin F. Guth and others.

The offices and showroom of the Lalance & Grosjean Mfg. Company, at 19 and 21 Cliff street, New York, are being entirely remodeled. Handsome metal ceilings and side walls have been put in place and the offices are to be completely refurnished and decorated.

When completed they will be among the most attractive quarters in the downtown district.

The New England Enameling Company, Middletown, Conn., have filed articles of incorporation, with a capital of $50,000, for the purpose of manufacturing and selling Enameled and all kinds of Steel Ware. The factory is to be located at South Farms. The incorporators are Jacob H. Newmann and Max Mailhouse of New Haven and Charles H. Brown and James H. Barry of Portland, Conn.

Kettering & Sanderson, 516 Sixteenth street, Chicago, announce that they have purchased the Stove, Hardware and House Furnishing business of Frank C. Goff & Co., and will also install hot air furnace work and special refrigeration plants.

The Cox-Edmand Hardware Company, Colorado Springs, Colo., have been incorporated with a capital stock of $25,000. The incorporators are John M. Cox, John A. Edmand and Clarence E. Cox.

J. E. Forsee & Son, 409 North Main street, St. Louis, Mo., are mounting Repair Knobs on Cards, with a picture of an Indian's Head in the center. The cards are 12 x 14 inches in size, with an easel back, so they can be used for display purposes. There are 49 knobs on each card, several different sizes being shown, and the cards are packed separately, each one in a box.

That the conventional Register, which has not changed in detail for years, has a rival for popularity is reflected in the growing demand for the Auer Side Wall Register, shown and fully described in our advertising columns, and made by the Auer Register Company, Toledo, Ohio. A feature that has attracted the attention of practical men in the heating business is that the Register presents but little obstruction to the flow of air and allows the full capacity of the flue. If used in a flue that also heats an upper room it will regulate the amount of air for each floor to a nicety. It has been found to increase the power of partition flues. The manufacturers are finding a growing interest in this Register among the furnace trade.

Welsh Tin Plate makers are making renewed efforts at the present time to push their product abroad and to discover new uses to which Tin Plates may be applied. W. Bright of the Wowerton Tin Plate Works and D. Richards of the Pantyffyon Tin Plate Works of South Wales are said to be making efforts to introduce into use a box made of Tin Plate as a substitute for the wooden box now used to supply aerated waters in Great Britain. Strength is given to the box by means of corrugations. Efforts are also being made to introduce Tin Plate linings into tea boxes in India, Ceylon and China, in place of the Lead lining that has always been used heretofore. Late advices from the other side indicate that a large market for Tin Plates has opened up in South Africa, where a great deal of construction work is already begun and is contemplated, which will call later for a large amount of Tin Roofing.

The Kentucky Iron Roofing & Corrugating Company have completed their new plant at Twelfth and Prospect avenues, Covington, Ky. The building is of iron frame construction covered with iron siding and corrugated roofing. It occupies an area of 50 x 250 feet. The building below the first floor will be used for storage and warehouse purposes. The machinery is of the very latest type, and each machine is driven by an individual electric motor. The present capacity of the plant is from 500 to 600 squares a day of strictly Iron Roofing. No steel material whatever will be used by the company, who are seeking to cater for a constantly growing demand for Iron instead of Steel Roofing. They claim that many users of sheet metal are going back to the original material. When the sheets are used for roofing purposes it is found that a good quality of Iron is far superior to the Steel Sheets now generally furnished for this purpose. The company at present are employing 25 men.

The annual convention of the American Foundrymen's Association will be held in Boston on Tuesday, Wednesday and Thursday, June 17-19. The Hotel Brunswick has been selected for the headquarters of the association, and the meetings will be held in the large assembly hall of the Massachusetts Institute of Technology. Secretary Richard Moldenke announces that from reports thus far received the attendance promises to be larger than at any previous meeting of the association. The Boston foundrymen are preparing to hospitably entertain the delegates to the convention.

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ROOFING SUPPLIES, METALS, TIN PLATES, &c.

REVISED MAY 2, 1902

Aluminum—

o. 1 Aluminum (guaranteed over 99% Pure), in ingots for remelting.

mall lots	℘ ℔, 37¢
00-℔ lots	℘ ℔, 35¢

luminum Sheet, B. & S. gauge.
In lots of 50 ℔s or more.

Vider than	6-in.	14-in.	24-in.
nd including	14-in	24-in.	30-in.
	℘ ℔	℘ ℔.	℘ ℔.
os. 13 to 19	$0.42	$0.44	$0.47
" 20	.44	.46	.49
" 21 to 23	.46	.48	.51
" 24	.46	.50	.53
" 25	.47	.51	.54
" 26	.47	.54	.59
" 27	.48	.57	.62
" 28	.48	.57	.64
" 29	.49	.60	.69
" 30	.50	.64	.77

Note.—Lots of less than 50 ℔s 5¢ ℘ ℔ extra.

Antimony—

Cookson	℘ ℔. 10¼@10¾¢
Hallett's	℘ ℔, 8⅜@8¾¢
U.S.	℘ ℔ 8⅜@8½¢

Brass, Roll and Sheet......30%

Conductors—

Corrugated.

Round or Square.—

Galvanized ½ or more. N'st'd	70&5%
" Not Nested	70&2½%
" Plain Round, ½ or more. Nested	70&5%
Galvanized, Plain Round, Not Nested.	70&2½%

Spiral Lock Seam Pipe—

Galvanized........ 60@60&10%

Spiral Riveted.

Galvanized........40%

See also *Elbows and Shoes; Eave Trough Miters; Strainers, Conductor.*

Conductor Strainers—

See *Strainers, Conductor*

Copper—

Lake Ingot	13 @13½¢
Casting	12¾@13 ¢
Sheet and Bolt	18¢ ℘ ℔ basis
Cold Rolled Sheets	19¢ ℘ ℔ basis
Cold Rolled and Polished Sheets	20¢ basis
Planished Sheets	21¢ basis
Bottoms, Pits and Flats	℘ ℔ 22¢ basis

Eave Trough Galvanized

Territory.	L. C. L.
Eastern	75&10%
Central	75&7½%
Southern	70&12½%
S. Western	70&10%

Terms, 2% for cash.

Eave Trough Mitres—

Lap or Slip Joint........list, 25%

Elbows—Plain Adjustable—

Eastern List.

Tin	80%
Galvanized	80%
Perfect Elbows	40%

Stove Pipe—

Four-Piece

	4	4½	5	5½	6-inch.
No. 1.	$0.80	.85	.90	1.00	1.05 per doz.
No. 2.	.65	.70	.75	.80	.85 "
No. 3.	.60	.63	.65	.70	.80 "

Elbows and Shoes—

Galvanized........60%

Gasoline—

See *Petroleum Products.*

Iron Sheet—*Black.*

	One Pass, C. R. Soft Steel.	R. G. Cleaned.
Nos. 14 to 16	℘ ℔. 3.50	3.55¢
Nos. 18 to 21	℘ ℔, 3.60	3.65¢
Nos. 22 to 24	℘ ℔, 3.70	3.75¢
Nos. 25 and 26	℘ ℔, 3.80	3.85¢
No. 27	℘ ℔, 3.90	3.95¢
No. 28	℘ ℔, 4.00	4.05¢

Russia, Planished, &c.

Genuine Russia, according to assortment	℘ ℔ 11@14 ¢
Do. Stained	6@10½¢
Patent Planished	℘ ℔ A, 11¢: B, 10¢ net

Galvanized.

Nos. 10 to 16	℘ ℔, 12¢	70@70&2½% off
Nos. 17 to 21	℘ ℔, 13¢	
Nos. 22 to 24	℘ ℔, 14¢	
Nos. 25 to 26	℘ ℔, 15¢	
No. 27	℘ ℔, 16¢	
No. 28	℘ ℔, 17¢	
No. 29	℘ ℔, 19¢	
No. 30	℘ ℔, 21¢	

36 in. 1¢ ℘ ℔ higher.

Lead—

American Pig		4.45@4½¢
Bar		5@5⅛¢
Pipe	6½¢	20% off
Tin Lined Pipe	12½¢	20% off
Block Tin Pipe	35 ¢	20% off
Sheet Lead	7¼¢	20% off

Old Lead in exchange, 3¼¢ ℘ ℔.

Mitres Eave Trough—

See *Eave Trough Mitres.*

Nickel—

Per ℔........55@60¢

Paints Oils &c.—

Leads—

Lead, American White, in Oil;	
Lots of 500 ℔ or over	6¼ @ 6½
Lots less than 500 ℔	6½ @ 6¾
Lead, White, in oil, 25 ℔ tin pails, add to keg price	@ ½
Lead, White, in oil, 12½ ℔ tin pails, add to keg price	@ 1
Lead, White, in oil, 1 to 5 ℔ assorted tins, add to keg price	@ 1½
Lead, White, Dry in bbls	5¾ @ 6
Lead, Red, bbls., ½ bbls. and kegs:	
Lots 500 ℔ or over	@ 6
Lots less than 500 ℔	@ 6½

Oils—

Linseed, City, raw	℘ gal. 67@67½¢
Linseed, City, boiled	69@69½¢
Linseed State and West'n, raw	66 @66½¢

Spirits Turpentine—

In Southern bbls	46 @46½¢
In machine bbls	47 @47½¢

Putty—

In bulk	$1.25
In bladders	2.25
In cans 12 ℔ to 25 ℔	2.25
In cans 1 ℔ to 5 ℔	3.25

Petroleum Products—

In Barrels (Barrel Included)

Stove Gasoline	℘ gal. 10½@11¢
Kerosene	℘ gal. 12@13¢

Pipe Drain........40%

Pipe, Spiral—

See *Conductors.*

Registers—

List Sept. 2, 1901.

Black Japanned	60&10@60&10&5%
White Japanned	60&10@60&10&5%
Nickel Plated	60&10@60&10&5%
Bronze Finishes in Imitation of Gold, Silver, Copper or Bronze	60&10@60&10&5%
Electroplated in Brass, Bronze or Cooper	60&10@60&10&5%
White Porcelain	60%
Solid Brass and Bronze Metal	50%

Roofing Material—

1 Ply Tarred Paper.	℘ ton. $31.00@32.00
2 Ply Tarred Paper	℘ roll, 108 sq. ft. 55@60¢
3 Ply Tarred Paper	℘ roll, 108 sq. ft. 80@85¢
Slater's Felt	℘ ton, $35.00@36.00
Roofing Pitch	℘ bbl. $2.50

Rosin—

Common and Good—Strained.

Rosin, C. & D.	℘ bbl.	$1.62½@$1.63
Rosin, E. & F.	℘ bbl.	1.70 @ 1.75
Rosin, G. & H	℘ bbl.	1.80 @ 1.85
Rosin, I. & K	℘ bbl.	2.10 @ 2.70
Rosin, M. & N.	℘ bbl.	3.05 @ 3.55

Shoes and Elbows—

See *Elbows and Shoes.*

Slate Roofing—

f. o. b. cars, Quarry Station.

	According to size.
Pennsylvania:	
Best Bangor, ℘ sqr	$3.25@$5.00
No. 1 Bangor Ribbon, ℘ sq	3.25@ 3.50
Pen Argyle, ℘ sqr	3.25@ 4.00
Peach Bottom, ℘ sqr	5.25@ 6.10
No. 1 Chapman, ℘ sqr	3.50@ 4.35
No. 1 Penna. Black	$2 75@3.80
Unfading Washington Bangor	$2.25@4.25
Vermont:	
Sea Green, ℘ sqr	$2.00@$3.40
Purple, ℘ sqr	4.25@ 4.75
Unfading Green, ℘ sqr	3.50@ 4.50
Red, ℘ sqr	6 50@10.50
Maine:	
Brownville, Unfading Black. No. 1	$5.00@7.20

Solder—

½&½ guaranteed	18½@19 ¢
No. 1	16 @17½¢

Prices of Solder indicated by private brands vary according to composition.

Soldering Fluids—

	Per Pound.	
	Barrels	Smaller Q'ntities
Concentrated Flux	4c	5c
Eureka Flux:		
Triple Strength	3c	3½c
Extra Concentrated	4½c	5c
Crystal	..	7c
Gedney's Fluid	2c	2c
Lennox Fluid	2c	3c
Perfection Flux	3c	3½@4c
Yager's Salts, 1 lb. bottles		each, 50¢
5 lb. bottles, per lb., 45¢		

Soldering Coppers—

Per ℔........20@22¢

Spelter—

Western Spelter........4.65@4.75¢

Spiral Pipe—

See *Conductors.*

Stove Pipe Elbows—

See *Elbows, Stove Pipe.*

Stove Trucks—

See *Trucks, Stove.*

Strainers, Conductor—

Galvanized........50%

Tin Pigs and Bars—

Banca, pigs. ℘ ℔	29½@29¾¢
Straits, pigs, ℘ ℔	29½@29¾¢
Straits, in bars, ℘ ℔	30½@30¾¢

Tin Plates, American

Charcoal Plates, Bright—

N. B.—The price of 20 x 28 sizes double the price of 14 x 20.

Calland Grade:		
IC,	14 x 20	$7.50
IX,	14 x 20	9.00
IXX,	14 x 20	10.25
IXXX,	14 x 20	11.50
IXXXX.	14 x 20	12.75
Melyn Grade:		
IC,	14 x 20	7.00
IX,	14 x 20	8.50
IXX,	14 x 20	9.75
IXXX,	14 x 20	11.00
IXXXX	14 x 20	12.25
Allaway Grade:		
IC,	14 x 20	6.50
IX,	14 x 20	7.60
IXX,	14 x 20	8.70
IXXX,	14 x 20	9.80
IXXXX,	14 x 20	10.90

Coke Plates, Bright—

Bessemer Steel, or equal to J. B. Grade, full weight	IC, 14 x 20	$4.90@5.00
" "	IX, 14 x 20	$6.00

N. B.—The reduction per box on lighter Plates than IC, 14 x 20, is as follows:

100 ℔	15¢
95 ℔	20¢
90 ℔	25¢
85 ℔	30¢

Terne Plates—

N. B.—The following prices are for IC 20 x 28, the rate for 14 x 20 being half as much. IX is usually held at $2 per box advance for 8 to 10 ℔ coating and $2.50 to $3 advance for 15 ℔ and upward.

About 40 ℔ coating	$16.00@16.50
About 30 ℔ coating	15.25@15.75
About 20 ℔ coating	13.25@13.75
About 15 ℔ coating	11.25@11.75
About 8 ℔ coating	@10.00

Boiler Plates, American—

IXX, 14 x 26..(112 sheets)	$12.50
IXX, 14 x 28..(112 sheets)	13.50
IXX, 14 x 31..(112 sheets)	15.00

Troughs Eave—

See *Eave Trough.*

Trucks, Stove—

Improved Lock Frame, per doz	$15.00
Steel Lock Frame, per doz	18.00
Daisy Improved pattern, ℘ doz	18.00

Tubes and Tubing—

Brazed Brass, List June 6, 1898........40%

Copper and Bronze, 8c per lb. list more than Brass.

Seamless Brass Tubes, net list Feb. 6, 1899

Tin	50%
Galvanized	50%
Fittings for do	40%

Zinc—

600 ℔ casks ℘ ℔	6¾¢
Per ℔	7¼¢

PLUMBERS' AND STEAM FITTERS' SUPPLIES.

Boilers, Galvanized—

Standard Boilers:	
30 gal	70&10%
35 and 40 gal	70%
Other sizes up to 52 gal	60@60&10%
52 gal. and above	60%
Extra Heavy Boilers:	
18 to 52 gal	60%
58 gal. and above	55%

Brass Work, Plumbers'—

List of December 7, 1896.

Compression:	
Basin Cocks	65%
Bath Cocks and Double Bath Cocks	65%
Bibs	65%
Bibs, Flanged	65%
Fuller:	
Bibs	70%
Basin Cocks, Nos. 1 to 4	70%
Bath Cocks, No. 4½	$2.40 each net
Ground Key Work:	
Finished Bibs	55&5%
Rough Bibs	70%
Rough Stop and Stop and Waste Cocks	70@70&5%
Rough Stop and Stop and Waste Cocks, Patented	65@65&5%

Miscellaneous—

Basin Clamps	60@65%
Basin Plugs	60@65%
Chain Stays.	60&5@70%

Iron Boiler Couplings:

	Lead Pipe.	Iron Pipe.
Plain Face..℘ set	$0.95	$1.05
Ground Face ℘ set	$1.00	$1.10

Sink or Bath and Wash Tray Plugs	60@65%
Soldering Nipples	70&5@75%
Soldering Unions	70&5@75%
Union Elbows, Hot Water Heating	75@75&15%

Cocks, Valves, &c.—

Cocks—

Brass—

Air and Radiator Air	75@75&5%
Gas Meter and Union Meter	65@70%
Steam	65@70%

Iron—

All Iron	70@70&10%
Iron with Brass Plugs	65@70%

Valves—

Brass—

Check	65@70%
Garden Hose	65&10@70%
Gate	65@65&10%
Globe and Angle, hose outlet	65@65&10%
Globe, Angle and Cross	65&10@70&5%
Horizontal, Vertical and Angle Check	65@65&10%
Hot Water Radiator	75%
Radiator	70&10%
Safety	65%
Safety, Low Pressure	65%
Jenkins' Disc:	
Check	65%
Gate	65%
Globe, Angle and Cross	70%
Radiator	80%
Radiator, Corner	75%
Safety	65%

Iron—

Iron Body	70@70&5%
Foot	65@70%
Jenkins Bros.':	
All Iron, except Gate	40&5%
All Iron Gate	35@40%
Iron Body, except Gate	60%
Iron Body Gate	50@50&5%
Swing Check	50%

Earthenware—

Brown Glazed Wash Tubs	20%
Brown Glazed Sinks, Kitchen and Pantry	20%
Basins, Urinals and Hoppers	45%
Closet Bowls, Sundries, Washouts and Pedestals	50%

Fittings—

Brass Fittings—

Finished	70@75%
Rough	70@75%
Bushings	70@75%
Nipples	70@70&2½%
Unions, Rough and Finished	70@70&5%

Iron—

Cast Iron Fittings, Black and Galvanized, Standard sizes	65@70%
Cast Iron Bushings and Plugs	65@70%
Cast Iron Flanges	65@70%
Cast Iron Floor Flanges	65@70%
Malleable Iron Fittings (from ℔ list)	50%
" " Bushings	65@70%
" " Unions	65@70%
" " Unions, Flange	60&10@70%
" " Pipe Hangers, Universal	50%
Wrought Iron Nipples	65@70%
" " Couplings	60@65%
" " Long Screws	60@65%

Lavatories—

Porcelain Enameled Iron........30@30&10%

Oakum—

Plumbers' Oakum, 50 lb. bales, ℘ ℔ 2½¢

Pipe—

Brass, Iron Pipe Size—

⅛	¼	½	¾ to 3 Inch
$0.33	.31	.29	.23 ℘ ℔

Cast Iron Soil—

List Feb. 25, 1901.

2 to 6 inch inclusive.

Standard	50&5%
Extra Heavy	60&7½%
All Fittings	65&10%

7 to 15 inch.

Pipe and Fittings, Standard and Extra Heavy........50%

Wrought Iron—

List Feb. 15, 1900.

	Black.	Galv
⅛ to ⅜ inch	55%	41%
¾ to 12 inch	65%	50%

Radiators—

Standard List.

Steam	50&2½%
Hot Water	50%

Sinks, Etc.— Cast Iron—

	Black.	Galv.
Sinks, Square, Half Round and Corner	60@65%	60@65%
Sink Legs.	60%	60@65%
Sink Backs	60%	60@65%
Boiler Stands, Cast Iron		60@60&10%
Cesspools, Cast Iron		60%

Wrought Steel Sinks—

New Era, Galv'd and Enameled.	70&5%
New Era, Painted	50&10%
L. & G.	50%

Traps—

Drawn Lead Traps, List June 8, 1901........50&5%

Tubs, Bath—

List April 1, 1902.

Cast Iron Enameled Bath Tubs.	
Regular Patterns, Guaranteed	30%
All Special Patterns	15%
Solid Copper, list of Feb. 1, 1899	40%
Solid Porcelain—Class A, 30%: B, 40%; C, 50%.	
Steel Clad Copper Lined, list of Feb. 1, 1899	50@55%

CLASSIFIED LIST OF ADVERTISERS.

Acetylene Gas Generators.
International Heater Co., Utica, N. Y.

Agate Nickel-Steel Ware.
Lalance & Grosjean Mfg. Co., 19 Cliff St., N. Y.

Aluminum Coated Sheet Steel.
Steel & Iron Aluminum Coating Co., Connellsville, Pa.

Aluminum Ingots.
Janney, Steinmetz & Co., Phila., Pa.

Aluminum Scrap Buyers.
Janney, Steinmetz & Co., Phila., Pa.

Aluminum Sheets.
Janney, Steinmetz & Co., Phila., Pa.

Architectural Ornaments.
Edwards Mfg. Co., Covington, Ky.
Frand, Martin J. & Co., Camden, N. J.
Friedley & Voshardt, Chicago, Ill.
Mullins, W. H., Salem, O.

Ball Cocks
Foster, F. W. Mfg. Co., Boston, Mass.

Bathtubs.
Day Metallic Mfg. Co., Detroit, Mich.

Black Plates.
American Tin Plate Co., New York.
Taylor, N. & G. Co., Phila., Pa.

Blast Gates.
American Blower Co., Detroit, Mich.

Blowers.
American Blower Co., Detroit, Mich.
Buffalo Forge Co., Buffalo, N. Y.

Boiler Handles.
Berger Bros. Co., Phila., Pa.

Boilers
Mueller, L. J. Furnace Co., Milwaukee, Wis.

Boilers, Range.
Koven, L. O. & Bro., 50 Cliff St., N. Y.

Brass Goods
Jenkins Bros., 71 John St., N. Y.

Can Makers' Tools and Machines.
Bliss, E. W. Co., Brooklyn, N. Y.
Gordon, W. J., Phila., Pa.
Niagara Machine & Tool Wks., Buffalo, N. Y.
Robinson, J. M. Mfg. Co., Cincinnati, Ohio.
Stiles & Parker Press Co., Brooklyn, N. Y
Toledo Machine & Tool Co., Toledo, O.

Castings, Iron.
Taylor & Boggis Foundry Co., Cleveland, O.

Ceilings, Metallic.
Berger Mfg. Co., Canton, O.
Canton Steel Roofing Co., Canton, O.
Eller, J. H. & Co., Canton, O.
Friedley & Voshardt, Chicago, Ill.
New York Iron Roofing & Cor. Co., Jersey City, N. J.

Cellar Drainers.
Kemp, C. M. Mfg. Co., Baltimore, Md.

Cement Tampers.
Kramer Bros., Dayton, O.

Coal Vases.
Cincinnati Stamping Co., Cincinnati, Ohio.

Coils.
National Pipe Bending Co., New Haven, Conn.

Conductor Pipe and Elbows.
American Steel Roofing Co., Middletown, O.
Berger Bros. Co., Philadelphia, Pa.
Clark, Quien & Morse, Peoria, Ill.
Lawrence-Letts Elbow Co., Ltd., Waverly, N. Y.
McClure & Co., Pittsburgh, Pa.

Copper, Roofing and Cornice.
Gummey, McFarland & Co., Phila., Pa.

Cornice Machinery.
Double Truss Cornice Brake Co., Buffalo, N. Y.
Dreis, Andrews & Krump, Chicago, Ill.
Keene, Geo. C. & Co., Cincinnati, O.
Niagara Machine & Tool Works, Buffalo, N. Y.
Ohl, Geo. A. & Co., Newark, N. J.
Peck, Stow & Wilcox Co., 27 Murray St., New York.
Phila. Machine Tool Co., Phila., Pa.
Robinson, J. M. Mfg. Co., Cincinnati, Ohio.

Cornice Work, Galvanized Iron.
Mullins, W. H., Salem, O.

Couplings. *(See Pipe Couplers.)*

Cut Offs, Rain Water.
Cooney & Geiger, Indianapolis, Ind.

Dampers.
Howes, S. M. Co., Boston, Mass.
Shields, W. H. & Co., Troy, N. Y.
Taylor & Boggis Fdry. Co., Cleveland, Ohio.
Troy Nickel Works, Troy, N. Y.

Die Stocks.
Curtis & Curtis Co., Bridgeport, Ct.

Drop Hammers.
Bliss, E. W. Co., Brooklyn, N. Y
Toledo Mach. & Tool Co., Toledo, O

Dryers.
Sommer's, John Son, Newark, N. J.

Dumb Waiters.
Energy Elevator Co., Phila., Pa.

Eave Troughs.
Berger Bros. Co., Philadelphia, Pa.
Berger Mfg. Co., Canton, O.
Clark, Quien & Morse, Peoria, Ill.
Eller, J. H. & Co., Canton, O.

Eave Trough End Formers.
Bishop, G. E., Dowagiac, Mich

Eave Trough Hangers.
Berger Bros. Co., Phila., Pa.
Berger Mfg. Co., Canton, O.

Edgers, Roofing.
Danzer Metal Works, Hagerstown, Md.

Elbows, Stove Pipe.
Lawrence-Letts Elbow Co., Ltd., Waverly, N. Y.
Shepard, Sidney & Co., Buffalo, N. Y

Emery Wheels.
Scranton Corundum & Emery Wheel Co., Scranton, Pa.

Enameled Ware.
Lalance & Grosjean Mfg. Co., 19 Cliff St., New York.
National Enameling & Stamping Co., 78 Beekman St., N. Y

Exhausters.
American Blower Co., Detroit, Mich.
Buffalo Forge Co., Buffalo, N. Y.

Faucets.
Clark Novelty Co., Rochester, N. Y

Fire Brick.
Presbrey Stove Lining Co., Taunton, Mass.
Rutland Fire Clay Co., Rutland, Vt.
Valentine, M. D. & Bro. Co., Woodbridge, N. J.
Williams Stove Lining Co., Taunton, Mass.

Fire Pots.
Burgess Soldering Furnace Co., Columbus, Ohio.
Clayton & Lambert Mfg. Co., Detroit, Mich.

Fire Sets.
Shields, W. H. & Co., Troy, N. Y.
Troy Nickel Works, Troy, N. Y.

Furnace Cement.
Perkins, J. L. & Co. Chicago.
Rutland Fire Clay Co., Rutland, Vt.

Furnace Pipe and Fittings.
Excelsior Steel Furnace Co., Chicago, Ill.
International Heater Co., Utica, N. Y.
Meyer, F. & Bro Co., Peoria, Ill.
Osborn, J. M. & L. A., Cleveland, O.

Furnaces and Heaters.
Amer. Furnace Co., St. Louis, Mo.
Barstow Stove Co., Providence, R. I.
Beckwith, P. D., Est. of, Dowagiac, Mich.
Bergstrom Bros. & Co., Neenah, Wis.
Bonnot Co., Canton, O.
Boynton Furnace Co., 207 Water St., N. Y.
Brand Stove Co., Milwaukee, Wis.
Brien Heater Co., Hoosick Falls, N. Y.
Cory, Uzal & Co. 210 Water St., N. Y
Dighton Furnace Co., Taunton, Mass.
Floyd, Wells & Co., Royersford, Pa.
Forest City Fdry. & Mfg. Co., Cleveland, O.
Graff Furnace Co., 208 Water Street, New York.
Hart & Crouse Co., Utica, N. Y.
Hess-Snyder Company, Massillon, Ohio.
Howes, S. M. Co., Boston, Mass.
International Heater Co., Utica, N. Y.
Kelsey Heating Co., Syracuse, N. Y.
Lennox Manufacturing Co., Marshalltown, Iowa.
Magee Furnace Co., Boston, Mass.
Meyer, F. & Bro. Co., Peoria, Ill.
Moncrief Furnace & Fdry Co., Atlanta, Ga.
Mueller, L. J. Furnace Co., Milwaukee, Wis.
Peck-Williamson Co., Cincinnati, O.
Richmond Stove Co., Norwich, Conn.
Robinson Furnace Co., Chicago, Ill.
Schwab, R. J. & Sons Co., Milwaukee, Wis.
Sheppard, Isaac A. & Co., Phila., Pa.
Stamford Foundry Co., Stamford, Ct.
Stanton Heater Co., Martins Ferry, O.
Tubular Heating and Ventilating Co., Phila., Pa.

Gas Heaters. *(See Stoves and Ranges, Gas.)*

Gas Machines.
Kemp, C. M. Mfg. Co., Baltimore, Md.

Granite Steel Ware.
National Enameling & Stamping Co., 78 Beekman St., N. Y.

Groovers.
Wheeler, W. A., Indianapolis, Ind.

Gutter Formers.
Double Truss Cornice Brake Co., Buffalo, N. Y.

Hack Saws.
Millers Falls Co., 28 Warren St., N. Y.

Heaters, Steam and Hot Water.
Barstow Stove Co., Providence, R. I.
Boynton Furnace Co., 207 Water St., N. Y.
Dighton Furnace Co., Taunton, Mass.
Drake, W. H., Newark, N. J.
Gorton & Lidgerwood Co., 96 Liberty St., New York.
Gurney Heater Mfg. Co., Boston, Mass.
Hart & Crouse Co., Utica, N. Y.
International Heater Co., Utica, N. Y.
Kewanee Boiler Co., Kewanee, Ill.
Magee Furnace Co., Boston, Mass.
Mueller, L. J. Furnace Co., Milwaukee, Wis.
National Pipe Bending Co., New Haven, Conn.
Pierce, Butler & Pierce Mfg. Co., Syracuse, N. Y.
Richmond Stove Co., Norwich, Conn.
Sheppard, Isaac A. & Co., Phila., Pa.
Smith, H. B. Co., Westfield, Mass.
Smith & Anthony Co., Boston, Mass.
Smith & Thayer Co., Boston, Mass.
Stolz, Frank D., Chicago, Ill.
Vance Boiler Works, Geneva, N. Y.
Wireton Heating Co., Blue Island, Ill.

Hollow Ware.
Lalance & Grosjean Mfg. Co., 19 Cliff St., N. Y.
National Enameling & Stamping Co., 78 Beekman St., N. Y.
Sperry, D. R. & Co., Batavia, Ill.

Hotel Cooking Apparatus.
Smith & Anthony Co., Boston, Mass.

Household Specialties.
Shepard, Sidney & Co., Buffalo, N. Y.

Ice Cream Dishers.
Clad, V. & Sons, Philadelphia, Pa.
Seavey Mfg. Co., Boston, Mass.

Iron, Galvanized Sheet. *(See Sheets, Galvanized.)*

Iron and Steel, Sheet. *(See Sheets, Iron and Steel.)*

Iron, Planished Sheet.
Amer. Sheet Steel Co., New York.

Lath, Metallic.
Schratwiesers Metal Lath Works.

Lead Pipe.
Colwell Lead Co., 63 Centre St., N. Y.

Lead Washers.
Littleford Bros., Cincinnati, O.

Lightning Rods.
Washburne, E. G. & Co., 46 Cortlandt St., N. Y

Lunch Boxes.
Seavey Mfg. Co., Boston, Mass.

Mail Boxes.
Signal Mail Box Co., Joliet, Ill.

Metal Ceilings. *(See Ceilings, Metallic.)*

Metal Patterns.
Pedersen, A. L. & Co., Chicago, Ill.

Metal Window Frames,
Smith-Warren Co., Boston, Mass.

Mica.
Munsell, Eugene & Co., 218 Water St., New York.
Ohio Mica Co., Canton, Ohio.
Rutland Fire Clay Co., Rutland, Vt.

Milk Cans.
National Enameling & Stamping Co., 78 Beekman St., N. Y.

Oil Heaters. *(See Stoves and Ranges, Oil, Vapor and Gasoline.)*

Ovens, Portable.
Blodgett, G. S. Co., Burlington, Vt.
Howes, S. M. Co., Boston, Mass.

Patent Solicitors.
Hamlin, G. R., Washington, D. C.
Howson & Howson, Philadelphia, Pa.
Stocking, E. B., Washington, D. C.

Patterns.
Cope, Geo. W., Detroit, Mich.
Gobeille Pattern Co., Cleveland, Ohio.
Gray, G. L., Galesburg, Ill.
Vedder Pattern Wks., Troy, N. Y.

Perforated Sheet Metal.
Harrington & King Perforating Co., Chicago, Ill.

Pig Iron.
Wister, L. & R. & Co., Philadelphia, Pa.

Pipe Cutting and Threading Machines.
Curtis & Curtis Co., Bridgeport, Ct.
Saunders, D. Sons, Yonkers, N. Y.

Pipe Joint Cement.
Callahan, Geo. & Co., 218 Front Street, N. Y.

Pipe Support Fittings.
Oberle, J. F., 780 2d Ave., N. Y.

Pipe Vises.
Walworth Mfg. Co., Boston, Mass.

Pipe, Water and Gas.
Millar, C. & Son Co., Utica, N. Y.

Plumbers Tools, Specialties and Supplies.
American Distributing Co., Syracuse, N. Y.
Anderson Coupling Co., Portland, Ct.
Barstow Stove Co., Providence, R. I.
Clayton & Lambert Mfg. Co., Detroit, Mich.
Colwell Lead Co., 63 Centre St., N. Y.
Foster, F. W. Mfg. Co., Boston, Mass.
National Pipe Bending Co., New Haven, Conn.
Oberle, J. F., 780 2d Ave., N. Y.
Pierce, Butler & Pierce Mfg. Co., Syracuse, N. Y.
Walworth Mfg. Co., Boston, Mass.
Young, Jos. H., Boston, Mass.

Plyers, Pipe Expanding.
Anderson Coupling Co., Portland, Ct.

Pokers and Lifters.
Shields, W. H. & Co., Troy, N. Y
Troy Nickel Works, Troy, N. Y.

Potato Masher.
Vogel, Wm. & Bros., 37 to 47 S. 9th St., Brooklyn, N. Y.

Press Work.
Kirk Mfg. Co., Toledo, O.

Presses and Dies.
Bliss, E. W. Co., Brooklyn, N. Y.
Gordon, W. J., Phila., Pa.
Miner & Peck Mfg. Co., New Haven, Conn.
Niagara Machine & Tool Wks., Buffalo, N. Y.
Phila. Machine Tool Co., Phila., Pa.
Robinson, J. M. Mfg. Co., Cincinnati, Ohio.
Swaine, F. J. Co., St. Louis, Mo

Pumps.
Hess-Snyder Company, Massillon, Ohio.
Lawless, John H., Jersey City, N. J
Noppel Pump Co., Hartford, Conn

Punching Machines.
Bertsch & Co., Cambridge City, Ind.
Bliss, E. W. Co., Brooklyn, N. Y.
Clough, R. M., Tolland, Conn.
Robinson, J. M. Mfg. Co., Cincinnati, Ohio.
Toledo Mach. & Tool Co., Toledo, O.

Radiators, Hot Air.
Burton, W. J. & Co., Detroit, Mich.
Independent Register Co., Cleveland, Ohio.
Selleck, A. C., Chicago, Ill.

Radiators, Steam and Hot Water.
Gurney Heater Mfg. Co., Boston, Mass.
Pierce, Butler & Pierce Mfg. Co., Syracuse, N. Y.

Range Boilers.
Koven, L. O. & Bro., 50 Cliff St., N. Y.

Reflectors.
Frink, I. P., 551 Pearl St., New York.

Refrigerators.
Challenge Refrigerator Co., Grand Haven, Mich.
Gurney Refrigerator Co., Fond du Lac, Wis

Registers.
Canton Steel Roofing Co., Canton, O.
Dighton Furnace Co., Taunton, Mass.
Independent Register Co., Cleveland, Ohio.
Seavey Mfg. Co., Boston, Mass.

Registers, Hot Air.
Auer Register Co., Toledo, O.

Roofing, Asphalt.
Asphalt Ready Roofing Co., 136 Water St., N. Y.

Roofing Cement and Paint.
Asphalt Ready Roofing Co., 136 Water St., N. Y.
Callahan, Geo. & Co., 218 Front Street, N. Y.
Dixon, Jos. Crucible Co., Jersey City N. J.
Perkins, J. L. & Co., Chicago.
Rutland Fire Clay Co., Rutland, Vt.

Roofing Cork.
Stowell Mfg. Co., Jersey City, N. J.

Roofing Edgers.
Danzer Metal Works, Hagerstown, Md.

Roofing and Siding, Iron and Steel, Corrugated and Plain.
Berger Mfg. Co., Canton, O.
Burton, W. J. & Co., Detroit, Mich.
Canton Steel Roofing Co., Canton, O.
Eller, J. H. & Co., Canton, O.
Gummey, McFarland & Co., Phila., Pa.
New York Iron Roofing & Cor. Co., Jersey City, N. J.

Roofing Nails.
Salem Nail Co., 279 Pearl St., N. Y.

Roofing Slate.
Auld & Conger Co., Cleveland, O.
Bray, J. & Co., E. Bangor, Pa.
Galt, John & Sons, 253 Broadway, N. Y.
Genuine Bangor Slate Co., Easton, Pa.
Johnson, E. J. & Co., 38 Park Row, N. Y.
O'Halloran & Jacobs, Pittsburgh, Pa.

Sap Spouts.
Millar, C. & Son Co., Utica, N. Y

Schools and Colleges.
Home Industrial School, Canton, O.
International Correspondence Schools, Scranton, Pa.

Screens.
Harrington & King Perforating Co., Chicago, Ill.

Screws.
Hubbell, Harvey, Bridgeport, Ct.

Sewer Pipe.
Rutland Fire Clay Co., Rutland, Vt.

Shaped Iron and Steel, Galvanized.
Am. Galvanizing Wks., Chicago, Ill.

Shears, Sheet Metal
McSherry, Chas., Pittsburgh, Pa.
Peck, Stow & Wilcox Co., 27 Murray St., N. Y.

Sheet Metal Machinery.
Bertsch & Co., Cambridge City, Ind.
Bliss, E. W. Co., Brooklyn, N. Y.
Clough, R. M., Tolland, Conn.
Double Truss Cornice Brake Co., Buffalo, N. Y
Excelsior Tool & Mch. Works, St. Louis, Mo.
Gordon, W. J., Phila., Pa.
Keene, Geo. C. & Co., Cincinnati, O.

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Miner & Peck Mfg. Co., New Haven, Conn.
Niagara Machine & Tool Wks., Buffalo, N. Y.
Ohl, Geo. A. & Co., Newark, N. J.
Peck, Stow & Wilcox Co., 27 Murray St., New York.
Phila. Machine Tool Co., Phila., Pa.
Robinson, J. M. Mfg. Co., Cincinnati, Ohio.
Stiles & Parker Press Co., Brooklyn, N. Y.
Swaine, F. J. Co., St. Louis, Mo.

Sheets, Aluminum Coated Steel.
Steel & Iron Aluminum Coating Co., Connellsville, Pa.

Sheets, Galvanized.
American Sheet Steel Co., New York.
Bruce & Cook, 186 to 190 Water St., N. Y.
McClure & Co., Pittsburgh, Pa.
Osborn, J. M. & L. A., Cleveland, O.
Wood Alan Co., Philadelphia, Pa.

Sheets, Iron and Steel.
American Sheet Steel Co., New York.
Bruce & Cook, 186 to 190 Water St., N. Y.
Coe, Jas. A. & Co., Newark, N. J.
Follansbee Bros. Co., Pittsburgh, Pa.
Gummey, McFarland & Co., Phila., Pa.
Osborn, J. M. & L. A., Cleveland, O.
Wood Co., Alan, Philadelphia, Pa.

Shingles and Tiles, Metallic.
Chattanooga Steel Roofing Co., Chattanooga, Tenn.
Cincinnati Stamping Co., Cincinnati, O.
Cortright Metal Roofing Co., Philadelphia, Pa.
Meurer Bros. Co., Brooklyn, N. Y.
Montross Metal Shingle Co., Camden, N. J.
Penn Metal Ceiling & Rfg. Co., Phila., Pa

Shot.
Colwell Lead Co., 63 Centre St., N. Y.

Siding. (*See Roofing and Siding.*)

Sinks.
Lalance & Grosjean Mfg. Co., 19 Cliff St., New York.

Skylights.
Canton Steel Roofing Co., Canton, O
Drouve, G. Co., Bridgeport, Conn
Mullins, W. H., Salem, O.
Rasner & Dinger, Pittsburgh, Pa.

Slaters' Tools.
Galt, Jno. & Sons, 253 Broadway, N. Y.
Salem Nail Co., 279 Pearl St., N. Y.

Smoke Test Machine.
Gunster & Forsyth, Scranton, Pa.

Snow Guards.
Clason Arch. Metal Works, Providence, R. I

Solder.
Bruce & Cook, 186 to 190 Water St., NY
Follansbee Bros. Co., Pittsburgh, Pa.
Gummey, McFarland & Co., Phila., Pa.
McClure & Co., Pittsburgh, Pa.
Meurer Bros. Co., Brooklyn, N. Y
Sanborn, J., 217 Water St., N. Y.
Taylor, N. & G. Co., Philadelphia, Pa.

Soldering Furnaces.
Burgess Soldering Furnace Co., Columbus, Ohio.

Speaking Tubes and Whistles.
Ostrander, W. R. & Co., 204 Fulton St., N. Y.

Specialties, Sheet Metal.
Vogel, Wm. & Bros., Brooklyn, N. Y.

Statuary, Sheet Copper and Bronze.
Mullins, W. H., Salem, O.

Steam and Gas Fitters' Supplies.
Curtis & Curtis Co., Bridgeport, Conn
Walworth Mfg. Co., Boston, Mass.

Steam and Water Engineering and Regulating Specialties.
Kieley & Mueller, 7-11 West 13th St., N. Y

Steel Stamps and Stencil Dies.
Schwerdtle Stamp Co., Bridgeport, Ct.

Stove Bands.
Kirk Mfg. Co., Toledo, O.

Stove Cement.
Dixon, Jos. Crucible Co., Jersey City, N. J.
Rutland Fire Clay Co., Rutland, Vt.

Stove Linings.
Bridgeport Crucible Co., Bridgeport, Conn.
McLeod & Henry Co., Troy, N. Y.
Marcy Stove Repair Co., 74 Beekman St., N. Y.
Presbrey Stove Lining Co., Taunton, Mass.
Rutland Fire Clay Co., Rutland, Vt.
Valentine, M. D. & Bro. Co., Woodbridge, N. J.
Williams Stove Lining Co., Taunton, Mass

Stove and Metal Polish.
Hoffman, Geo. W., Indianapolis, Ind.
Rutland Fire Clay Co., Rutland, Vt.

Stove Patterns.
Cope, G. W., Detroit, Mich.
Gobeille Pattern Co., Cleveland, O.
Milwaukee Pattern Works, Milwaukee, Wis.
Vedder Pattern Works, Troy, N. Y

Stove Pipe.
Triumph Adjustable Stove Pipe Mfg. Co., Peoria, Ill.

Stove Pipe Thimbles.
City Forge & Iron Works, Dayton, O
O. K. Mfg. Co, Buffalo, N. Y.

Stove Repairs.
Clark, Henry N. Co., Boston, Mass.
Heath, C. C. & Co., Phila., Pa.
Howes, S. M. Co., Boston, Mass.
Marcy Stove Repair Co., 74 Beekman St., N. Y.
Metropolis Sheet Metals & Stove Repairing Co., Newark, N. J.
Troy Nickel Works, Troy, N. Y

Stove Trimmings, &c.
Fanner Mfg. Co., Cleveland, O.
Shields, W. H. & Co., Troy, N. Y.
Troy Nickel Works, Troy, N. Y

Stove Trucks.
Howes, S. M. Co., Boston, Mass.
Tucker & Dorsey Mfg. Co., Indianapolis, Ind.

Stoves and Ranges.
Barstow Stove Co., Providence, R. I.
Beckwith, P. D., Est. of, Dowagiac, Mich.
Bergstrom Bros. & Co., Neenah, Wis.
Boynton Furnace Co., 207 Water Street, New York.
Brand Stove Co Milwaukee, Wis.
Dighton Furnace Co., Taunton, Mass.
Enterprise Stove Co., Vincennes, Ind.
Floyd, Wells & Co., Roversford, Pa.
Fuller & Warren Co., Troy, N. Y.
Graff Furnace Co., 208 Water Street, New York.
Hess-Snyder Company, Massillon, O.
Joliet Stove Works, Joliet, Ill.
Magee Furnace Co., Boston, Mass.
Miller, Wm. Range & Furnace Co., Cincinnati, O.
Ohio Stove Co., Portsmouth, O.
Pittsburgh Stove & Range Co., Pittsburgh, Pa.
Quincy Fdry. & Novelty Co. Quincy, Ill.
Rathbone, Sard & Co., Albany, N. Y.
Richmond Stove Co., Norwich, Conn.
Sheppard, Isaac A. & Co., Phila., Pa.
Smith & Anthony Co., Boston, Mass.
Somerset Stove Foundry Co., Somerset, Mass.
Stamford Foundry Co. Stamford, Ct.
Weir Stove Co., Taunton, Mass
Willard, Wm. G., St. Louis, Mo.

Stoves and Ranges, Gas.
Dighton Furnace Co., Taunton, Mass.
Metropolis Sheet Metals & Stove Repairing Co., Newark, N. J.

Stoves and Ranges, Oil, Vapor and Gasoline.
Cleveland Foundry Co., Cleveland, O.
Heath, C. C. & Co, Philadelphia, Pa.
Rathbone, Sard & Co., Albany, N. Y.
Taylor & Boggis Foundry Co., Cleveland, O.

Street Lamps, Gasolene.
Merkel, H., St. Louis, Mo.

Tanks, Steel and Wood.
Edwards, J H., 59 Park Place, N. Y.

Terne Plates.
American Tin Plate Co., New York.
Taylor, N. & G. Co., Phila., Pa

Tinners' Tools, Machines and Supplies.
Berger Bros. Co., Phila., Pa.
Bertsch & Co., Cambridge City, Ind.
Bliss, E. W. Co., Brooklyn, N. Y.
Bruce & Cook, 186 to 190 Water St., New York.
Follansbee Bros. Co., Pittsburgh, Pa.
Keene, Geo. C. & Co., Cincinnati, O.
Niagara Machine & Tool Wks., Buffalo, N. Y.
Ohl, Geo. A. & Co., Newark, N. J.
Peck, Stow & Wilcox Co., 27 Murray St., New York.
Stiles & Parker Press Co., Brooklyn N. Y.
Weiss, H. & Co., 20 Cliff St., N. Y

Tinners' Trimmings.
Vogel, Wm. & Bros. Brooklyn, N. Y.

Tin Plate.
American Tin Plate Co., New York.
Bruce & Cook, 186 to 190 Water St., New York.
Coe, Jas. A. & Co., Newark, N. J.
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Gummey, McFarland & Co., Phila., Pa.
McClure & Co., Pittsburgh, Pa.
Meurer Bros. Co., Brooklyn, N. Y.
Osborn, J. M. & L. A., Cleveland, Ohio.
Taylor, N. & G. Co., Philadelphia, Pa.

Tin Scrap.
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Vulcan Western Co., Streator, Ill.

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Curtis & Curtis Co., Bridgeport, Conn.
Saunders', D. Sons, Yonkers, N. Y

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Clayton & Lambert Mfg. Co., Detroit, Mich.

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Kirk Mfg. Co., Toledo, O

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Boss Washing Machine Co., Cincinnati, Ohio.
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National Enameling & Stamping Co., 78 Beekman St., N. Y

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Colwell Lead Co., 63 Centre St., N. Y.

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Smith-Warren Co., Boston, Mass.

Wiping Cloths.
Allbe, Chas. A., Springfield, Mass.

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THE METAL WORKER.

With which is Incorporated The Stove and Tin Trade Journal, The Sheet Metal Builder, and Metal.

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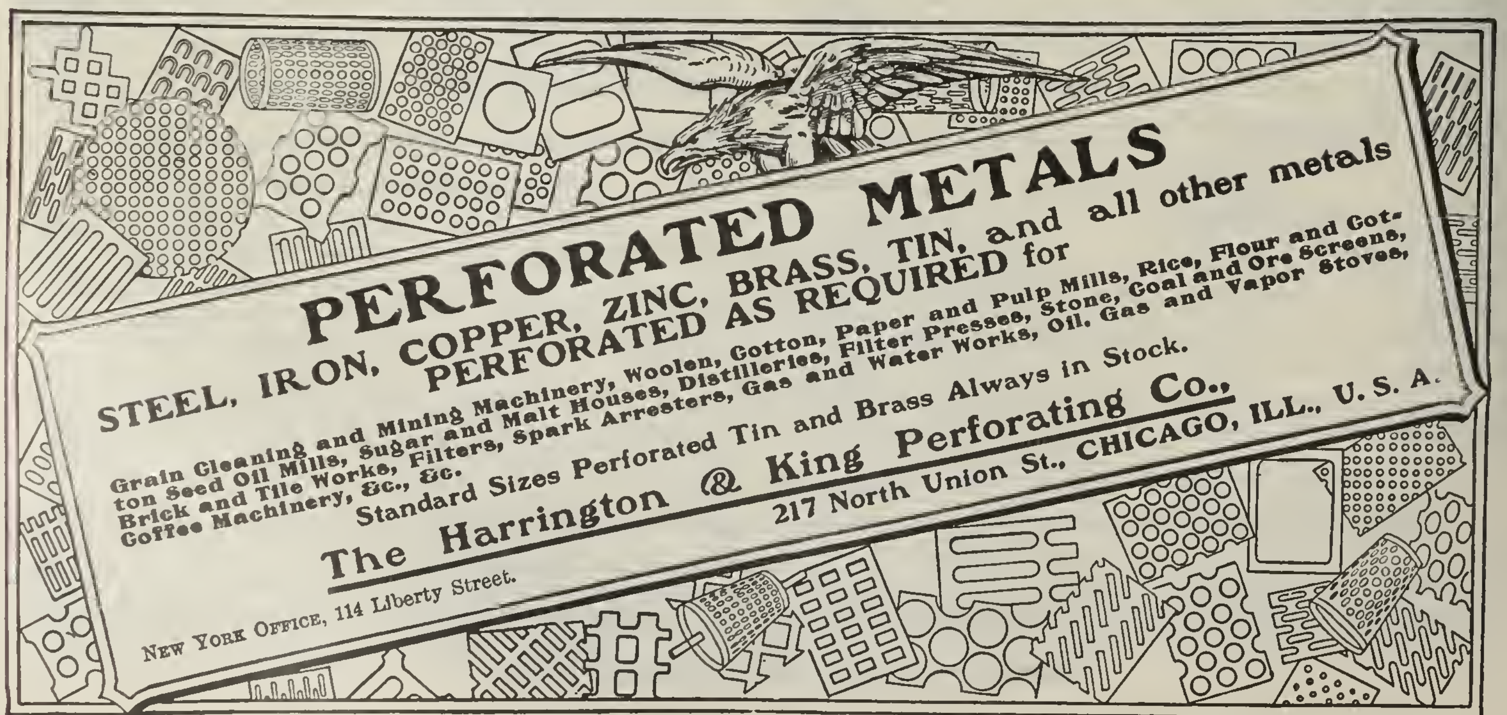

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Original letters of reference should not be inclosed with replies to advertisements appearing in these columns as they are frequently mislaid and lost. A copy of the reference will serve the purpose.

HELP WANTED.

At once, a PLUMBER, one that can do tinsmithing, furnace and range work; must be a good workman; steady job to the right man; state experience and wages expected. E. A. Burbank, Berlin, N. H. May 3

First-class SALESMAN for steam and hot water heating and general construction; work on commission; strictly confidential; permanent arrangement will be made with good man who can get business. "Construction," care *The Metal Worker*, New York. May 3

At once, a first-class TINSMITH; one that can do plumbing and be able to do any job that comes to a country job shop; steady job to the right man; state wages and experience. E. A. Burbank, Berlin, N. H. May 3

WOOD PATTERN MAKER; first-class workman, skilled in store and furnace work; must give references. Stamford Foundry Company, Stamford, Conn. May 3

Two good TINNERS; must be good on jobbing, eave trough and furnace work; good wages and steady work. Apply at once to E. N. Howell Hardware Company, Dixon, Ill. May 3

Reliable, energetic TINNER: good wages and steady work to the right party. J. Kuchler, 325 West Forsyth street, Jacksonville, Fla. May 3

Ten first-class STOVE MOUNTERS to work on gas ranges. Abendroth Bros., Port Chester, N. Y. May 3

First-class JOBBING TINSMITHS; steady work to sober and reliable men. Howard Heating Company, Worcester, Mass. May 3

METAL WORKERS on punches and riveters, &c.: steady work near New York. "B. C.," care *The Metal Worker*, New York. May 3

Two TINNERS; good on outside work: steady work the year around; work in the shop in winter; state wages wanted. P. H. Bayley, Sidney, Ohio. May 3

At once, a good, steady, sober, all around PLUMBER and TINNER for a country shop; $2.50 per day; steady job if you can do the work. Geo. W. Gibney, Pawling, N. Y. May 3

At once, a first-class TINSMITH; one who understands pumps, furnaces, plumbing and country work generally; state wages wanted and give references: a steady job for the right man. C. H. & E. D. Brigham, Palmyra, N. Y. May 3

An all around TINSMITH; one used to country work preferred; must be a sober and good man; steady job; state wages wanted. Wm. B. Cooper, Medford, N. J. May 3

Two good SLATERS. Apply to the Peet & Schuster Company, Springfield, Ohio.

Six reliable BLOW PIPE MEN; men who are competent to put up work on the road and also familiar with shop work; good wages and steady work. The Ohio Blow Pipe Company, corner Seneca and Michigan streets, Cleveland, Ohio. May 3

Experienced STOVE MOUNTER for an "open shop" near Chicago. Box 48, care *The Metal Worker*, 1205 Fisher Building, Chicago, Ill. Apr. 26

At once, an experienced TINNER who can do plumbing, pipe fitting, pumps, &c.; a good all around man for country shop: state wages. P. O. Box 133, Toms River, N. J. Apr. 26

STOVE SALESMEN of experience for Illinois, Iowa and Wisconsin; state former employer and amount of sales. "Salesman," care *The Metal Worker*, Park Building, Pittsburgh, Pa. Apr. 19

POWER CORNICE PRESS HAND; an experienced, intelligent, faithful man desired. David Lupton's Sons, Alleghany avenue and Tulip street, Philadelphia, Pa. Apr. 12

TINSMITH, at once; steady work to a first-class man; nine hours; state age, experience and wages wanted. Lock Box 1086. Southbridge, Mass. Apr. 26

A sober and reliable TIN, SHEET IRON and FURNACE WORKER, with some knowledge of iron pipe and pump work; call in person or wire at once: this is a steady job. M. Carney Estate, Philmont, N. Y. Apr. 26

At once, two good CORNICE MAKERS. Henry Weyand, Waterbury, Conn. Apr. 26

Two PLUMBERS; must be A1 workmen, sober and able to do a good day's work; wages $3 per day. Grimshaw & Redfield, West Hampton Beach, N. Y. Apr. 26

A good all around TINNER; state salary expected and experience. Wolf & Sons, Box 115, Frostburg, Md. Apr. 26

Nonunion PLUMBERS: will pay high wages; nine hours; steady job for right men; only first-class men need apply. Box 553, Newport News, Va. Apr. 26

A first-class MELTER in a stove foundry and skylight work. "D. O.," care *The Metal Worker*, New York. Apr. 26

SOLICITOR and ESTIMATOR for cornice and skylight shop. "D. O.," care *The Metal Worker*, New York. Apr. 26

At once, a first-class TINSMITH; one who understands pumps, furnaces, plumbing and country work generally; state wages wanted and give references; steady job for the right man; must be energetic and strictly sober. "S.," care *The Metal Worker*, New York. Apr. 26

A TIN and SHEET IRON WORKER who can do furnace work and has some knowledge of plumbing; wages $2 per day to a suitable man. McRae & Son, St. Johnsville, N. Y. Apr. 26

A good, first-class TINNER and ROOFER; one accustomed to inside and outside work; must be sober and reliable; please state age and time employed in one place. C. S. McLean & Co., Utica, N. Y. Apr. 26

Three or four good TIN, GALVANIZED IRON and GENERAL SHEET METAL WORKERS; married men preferred; steady work; nine-hour day; good wages to sober, reliable, union men. Lock Box 55, Chattanooga, Tenn. Apr. 26

SALESMAN posted in the sheet iron and metal business. "D. S.," care *The Metal Worker*, New York. Apr. 26

TINNER; state ability, wages desired, &c. F. B. Karl, Delaware, Ohio. Apr. 26

A first-class PLUMBER to do repair work in country residences in Jersey. Reply, stating references, qualifications and wages, to "All Right," care *The Metal Worker*, New York. Apr. 26

Yearly contract to a strictly sober and reliable TINSMITH; must be a good workman; $2.50 per day, ten hours. Bodine & Davis, Bellows Falls, Vt. Apr. 26

A man of good appearance and genial temperament, who understands hardware and has some knowledge of plumbing and heating, as OUTSIDE SALESMAN in small city. "A.," care *The Metal Worker*, New York. Apr. 26

Six first-class TINNERS and six first-class CORNICE MAKERS at once. Duluth Corrugating & Roofing Company, Duluth, Minn. Apr. 26

A TINNER; must be a first-class, all around workman; good wages and steady job to the right man. Carnarius & Dudley, Terre Haute, Ind. Apr. 26

A good PLUMBER who understands tinsmithing, both inside and outside; steady work in country town; state wages wanted, copy of reference, age, &c. Box 93, Gilbertsville, N. Y. Apr. 26

TINNER; one who can do inside and outside job work, such as roofing, guttering, &c., is sober and industrious, will be given steady work the year round; married man preferred; none need apply but one who understands his business and is willing to work; this is a good healthy town; free school, &c. P. O. Box 515, Shelbyville, Ky. Apr. 26

A first-class STOVE PATTERN MAKER; one that thoroughly understands his business; for such a man a good paying position will be given. "Patterns," care *The Metla Worker*, New York. Apr. 26

A first-class TINSMITH; one accustomed to shop work, jobbing, range and furnace work; steady work to reliable, steady man; state wages wanted, &c. F. S. Thompson, Kingston, N. Y. Apr. 26

An ESTIMATOR for cornice, skylight and all kinds of roofing; capable to take off work from plans, details and specifications; state ability, experience and salary expected. "A. C.," care *The Metal Worker*, New York. Apr. 26

SITUATIONS WANTED.

By a young man, 33 years of age; first-class PLUMBER and GAS FITTER; 18 years' experience in New York City; can figure and read from plans; as journeyman or take charge; licensed and registered by the New York Board of Health and Department of Public Works; go anywhere; state full particulars. P. H. Becker, Lilian place and Woodruff street, New York. May 3

As PLATER; experienced on plumbers' brass work, fine engine work, stove work, &c.; steady, sober and industrious; wages moderate. Arthur Owen, Box 58, East Syracuse, N. Y. May 3

By a practical PLUMBER, STEAM and GAS FITTER; one who can estimate on all kinds of work; no objection to going out of city. "Place," care *The Metal Worker*, New York. May 3

A good TIN and SHEET IRON WORKER, who also understands roofing and heater work, wants a steady job, city or country. John Sherman, 721 Hoffman street, Philadelphia, Pa. May 3

By a young man with 15 years' experience in a general jobbing shop; steady employment. "Plumber," P. O. Box 520, Ballston Spa, N. Y. May 3

By a first-class mechanic, 33 years of age, who will be open for engagement about May 1, for position as FOREMAN; accustomed to light and heavy iron work, tanks, stacks, boilers, and general work about ship yard, and especially blow pipe and exhaust work; first-class layer out; can detail and make working drawings; strictly sober and industrious; married, with small family; can give best of reference from present employer. "A. B. C.," 310 New street, Philadelphia, Pa. May 3

By TINNER of 17 years' experience on all lines of job work; at bench or inside job work; can clerk in store; first-class workman; strictly sober; steady work; will go anywhere. Box 545, Findlay, Ohio. May 3

A first-class STOVE PATTERN FITTER, experienced in all kinds of stove and heater patterns; also as FOREMAN; wishes to correspond with some reliable stove house desiring the services of a competent man in their pattern shop; references furnished. "Pattern Fitter," care *The Metal Worker*, New York. May 3

By a first-class man of 20 years' practical experience as SUPERINTENDENT or HEAD FOREMAN in making tin and iron stamped ware. "Tinning," care *The Metal Worker*, New York. May 3

By a first-class PLUMBER; jobbing or new work; city or country. A. Kennedy, 31 Catherine street, Albany, N. Y. May 3

By first-class MECHANIC; 20 years' experience at tinning, plumbing, steam, hot water and hot air heating. Box 383, Hillsboro, Ill. May 3

By young German TINSMITH and ROOFER; country town preferred. Charles Bobesh, 510 West Forty-third street, New York. May 3

By japanner as FOREMAN; understands how to mix all shades of color and japan; all round man; first-class references. "S. H.," care *The Metal Worker*, New York. May 3

By young man with five years' experience at plumbing; temperate and industrious; 26 years old; willing to go anywhere to good shop. "W. H. C.," care *The Metal Worker*, New York. May 3

Licensed PLUMBER and GAS FITTER; expert on jobbing and overhauling range work, sheet metal, roof repairing and painting; all round man; only responsible parties need answer. "Expert," care *The Metal Worker*, New York. May 3

As WORKING FOREMAN and CUTTER in cornice and skylight work; good mechanic, reliable and temperate; understand all kinds of roofing; handle help to good advantage and estimate on all kinds of work; position desired at once. "H. G.," care *The Metal Worker*, New York. Apr. 26

By a PLUMBER and TINSMITH; a good all around man and understand all branches of the trade; position wanted by the year and will consider no other proposition; can furnish A1 references. Ernest H. Keir, Hardwich, Vt. Apr. 26

By young single man of three years' experience in country shop; good climber and not afraid of work; wages reasonable. Wm. Powell, Lewisburg, Ohio. Apr. 26

SALESMAN with an established trade amog the hardware, stove and house furnishing trade through Virginia, North Carolina, South Carolina and Georgia is open for an engagement. "Salesman," 519 Freemason street, Norfolk, Va. Apr. 19

Am well equipped in foundry practice; can render excellent service in the running and general care of stove or heater business; have had splendid experience; 31 years old; good references. "P. G.," care *The Metal Worker*, New York. Apr. 19

By young man (27), strictly temperate, with some good hardware concern as CLERK; has had experience in the hardware line; best of references. "F. J. T.," care *The Metal Worker*, New York. Apr. 19

FOR SALE.

A valuable manufacturing property, situated at 23d and Smallman Streets, Pittsburg, Pa. Remarkably well located as to shipping facilities, consisting of new steel constructed building 118 x 154 feet, thoroughly equipped with suitable machinery and tools for working in sheet metals. This establishment has a long ground lease, on very favorable terms and a large trade that will naturally follow it. It is the only concern in the Pittsburg district, with all machinery, for making corrugated conductor pipe, eaves trough, ridge roll, etc. This is an opportunity to secure a bargain for one desiring a business, that can be operated at once. Any one caring to investigate, with object of buying the building, machinery, etc., or any practical party, with capital caring to take an interest in the business, please address

H. L. IRWIN, Receiver for
Marlin & Co., Inc.,
Pittsburg, Pa.

FOR SALE.

Cornice, Tin and Sheet Metal job shop in one of the best towns in Iowa. 15,000 population. Good shop and a well established business. Plenty of work and a money maker. A snap for a cornice maker and tinner who wants to get into a good paying business. About $700 cash required.

Address BOX 49,
Care *The Metal Worker*, Chicago.

The W. E. Spangler Double Lock Folder or Edger and Repairs

can be had from the W. S. Tool and Machine Works, York, Pa., or No. 3243 M. St., Washington, D. C.

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Some simple article of **METAL TO MANUFACTURE**, or any work to do that can be done chiefly on the lathe.

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Wilmington, Mass.

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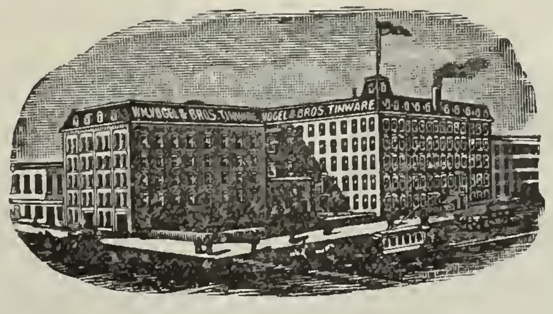

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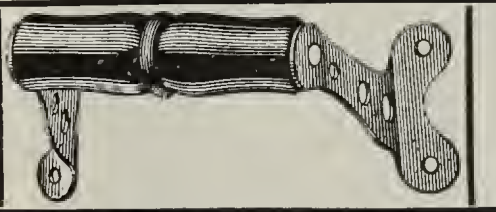

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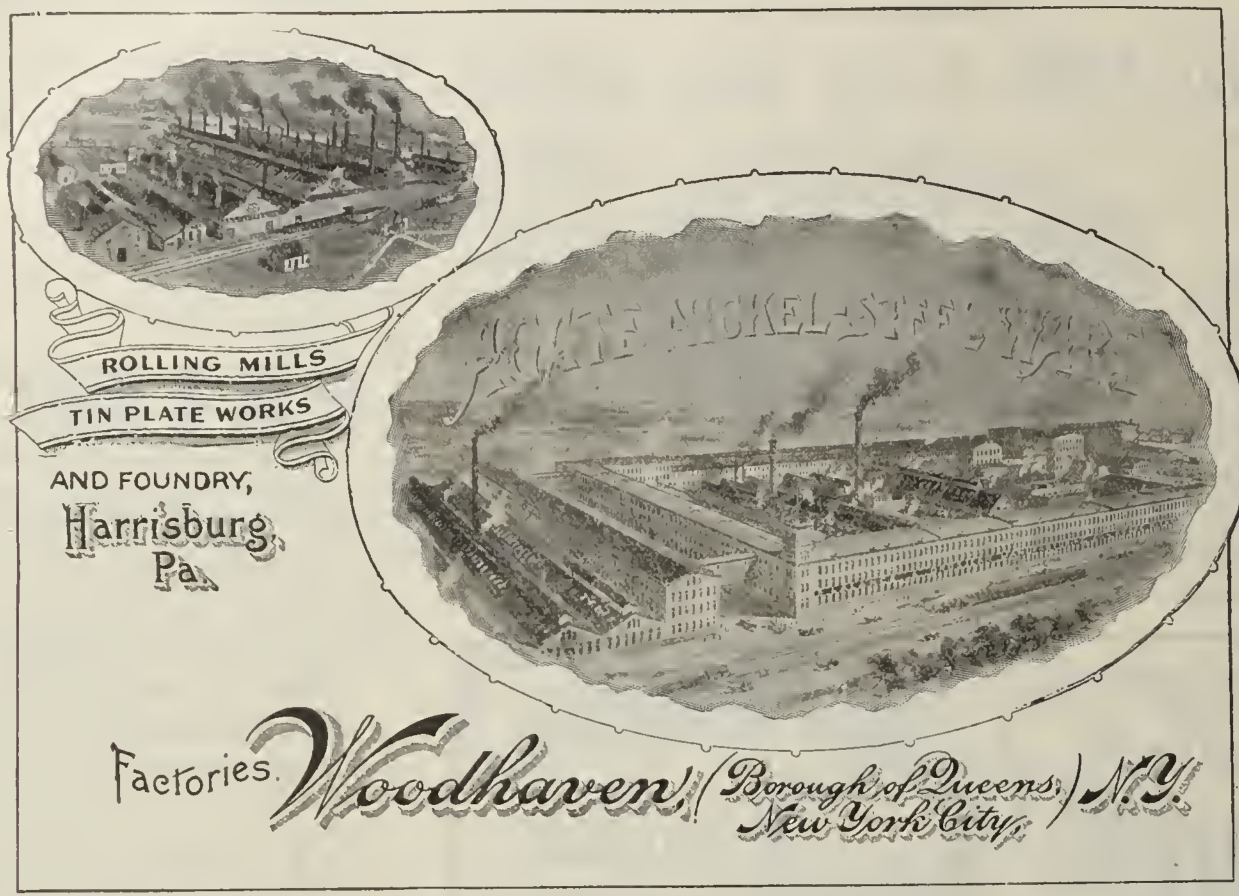
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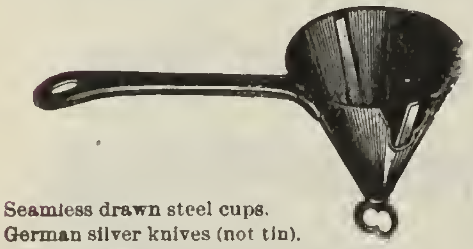

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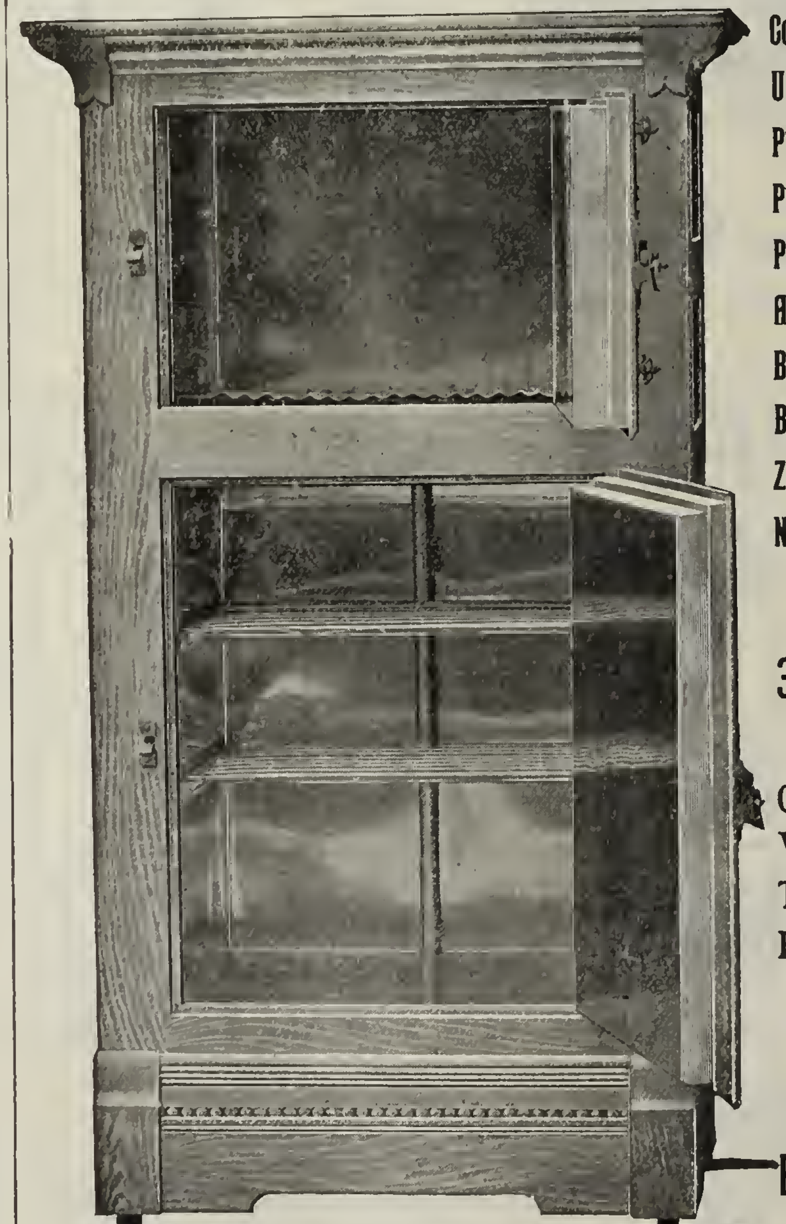

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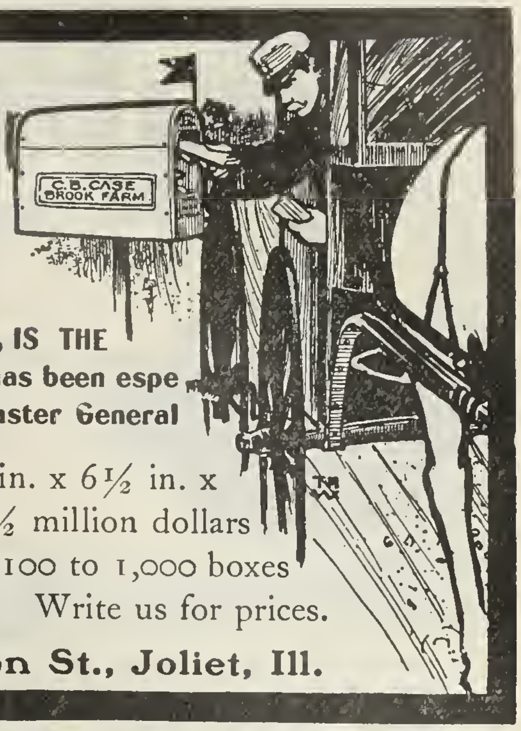

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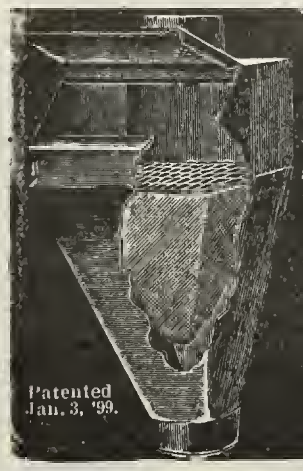

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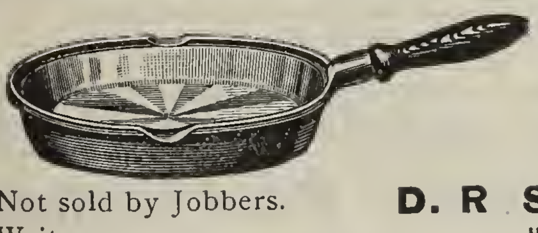

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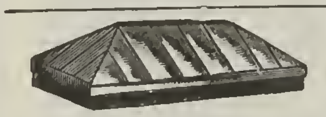

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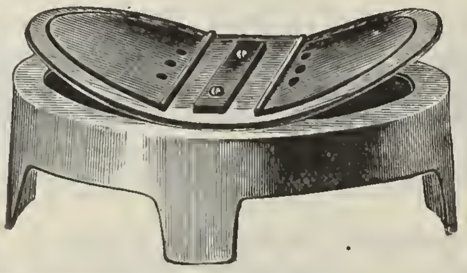

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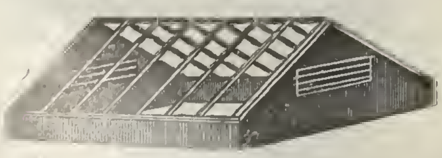

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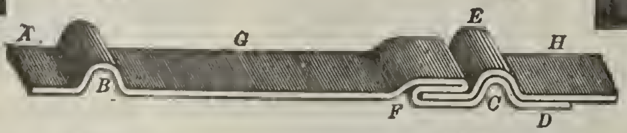

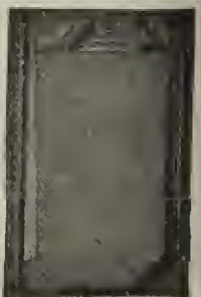

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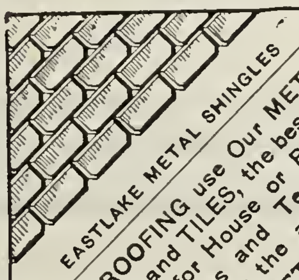

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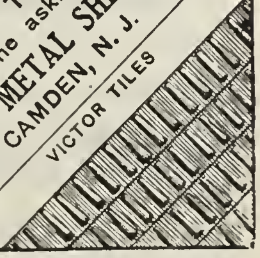

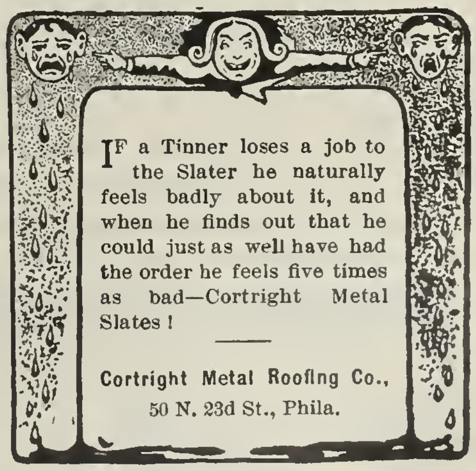

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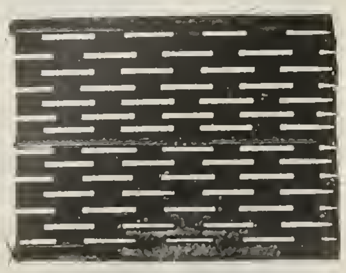

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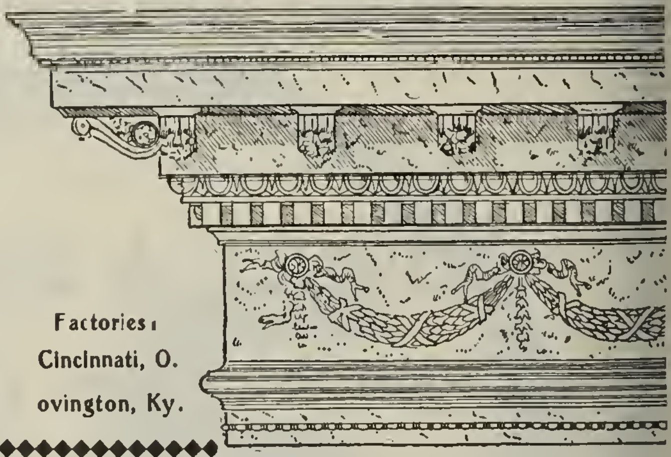

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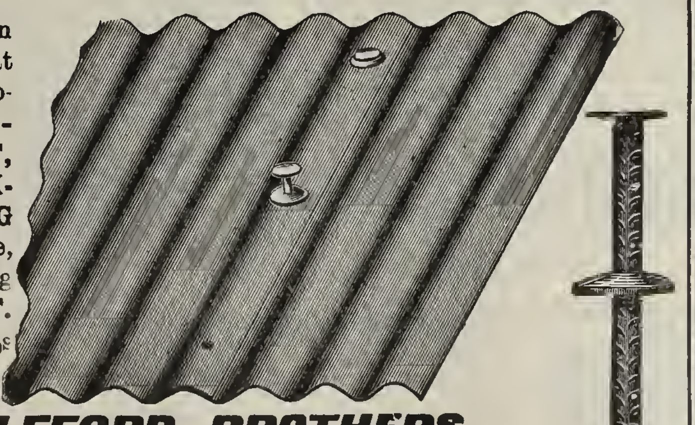

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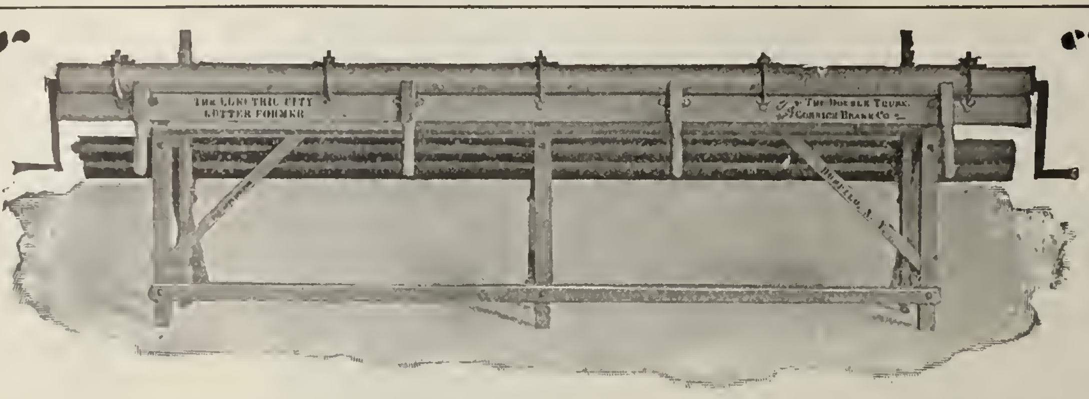
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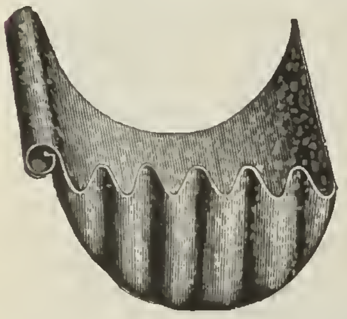

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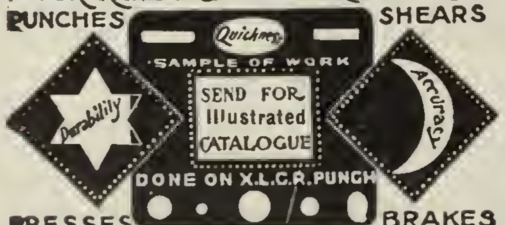

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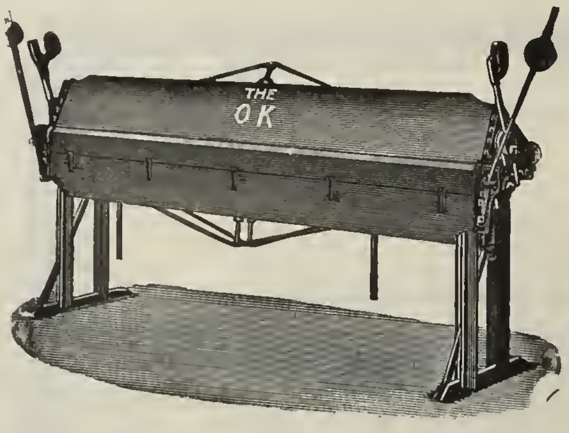

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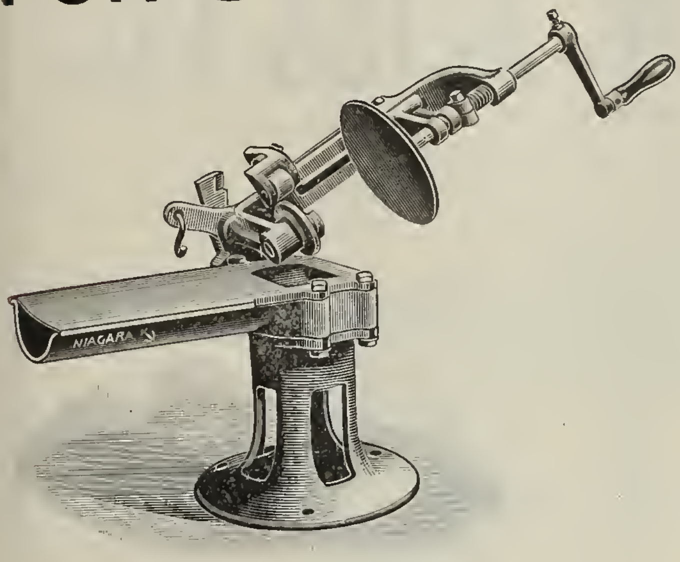

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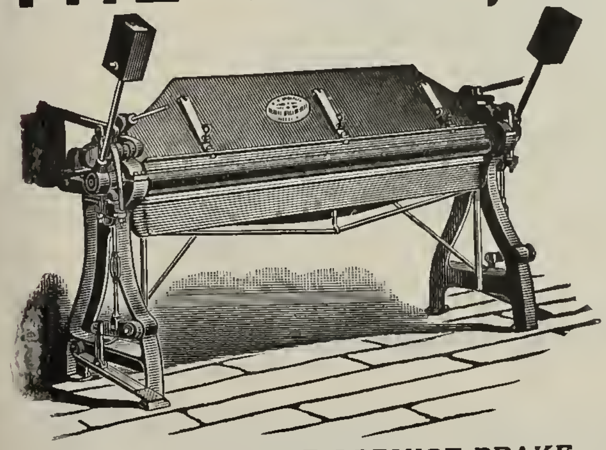

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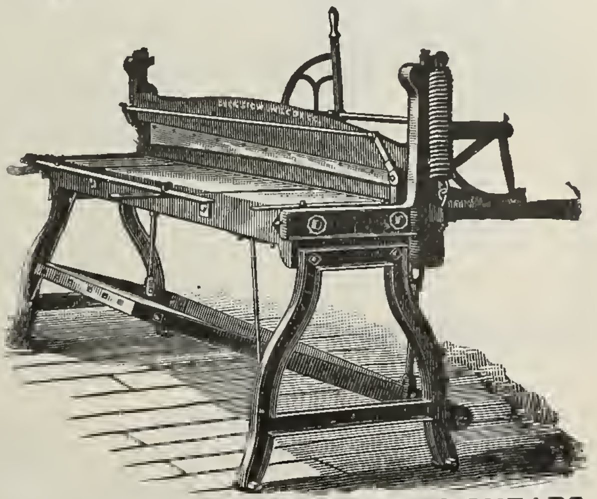

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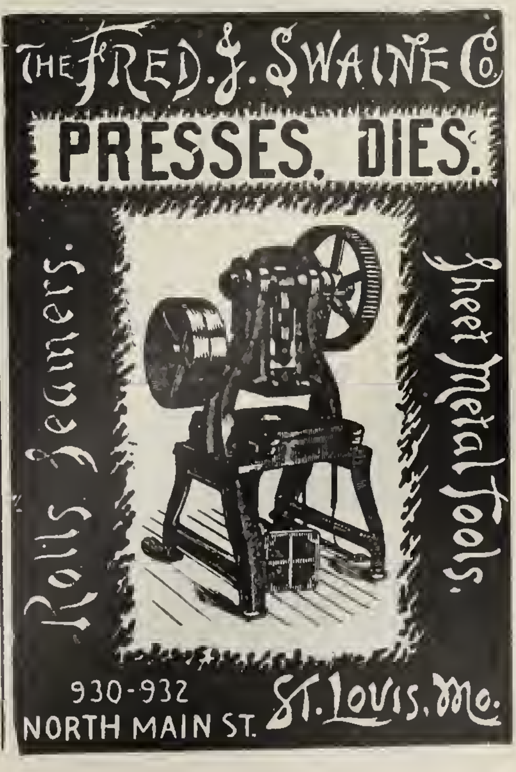

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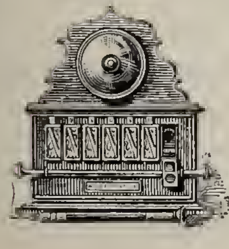

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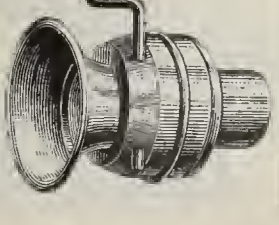

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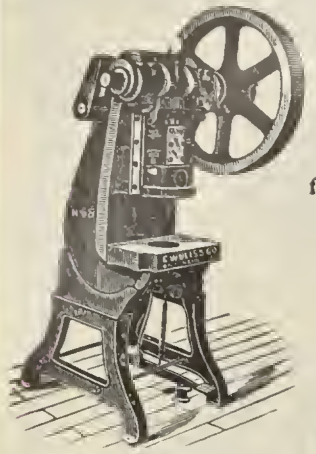

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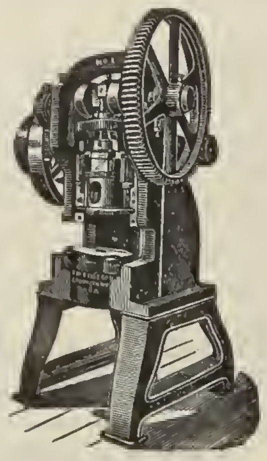

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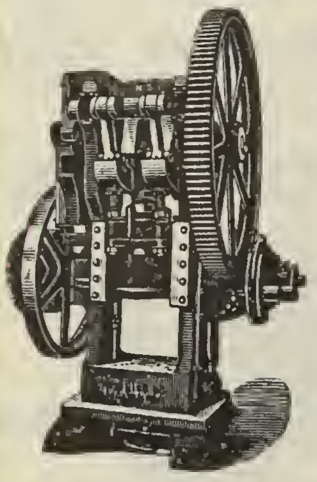

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N.W. EMBOSSING PUNCHING N.E.

REDUCING DRAWING

WEST ← PRESSES → EAST

FORMING STAMPING

S.W. TRIMMING BENDING S.E.

SOUTH

WE ARE SENDING THEM IN ALL DIRECTIONS.

Correspondence Solicited. **Estimates Furnished.**

Also Owning and Operating **The Stiles & Parker Press Co.**

Gray's Perfect

SKYLIGHT PATTERNS.

Made on Heavy Blue Print Paper.

Any tinner or cornice man, with a brake and a set of Perfect Skylight Patterns and chart, can make a **Hip Gable or Single Pitch Skylight.**

Write for illustrated Skylight Pattern Circular and Prices. also for blue print sample section of Hip and Gable Skylight. Will make details and patterns for cornices or anything in the sheet metal line upon receipt of sketch and measurements. Address

G. L. GRAY,

840 N. Cedar St., Galesburg, Ills.

GEO. A. OHL & CO., 157, 159, 161 Oraton St., NEWARK, N. J. (Telephone 873.)

Manufacturers of all kinds of **Metal Workers' Machines,**

BRAKES

(ALL SIZES),

Heavy and Light

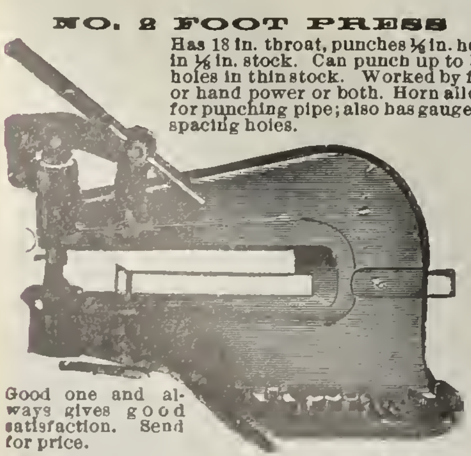
Squaring Shears,

Punches. Presses, Sheet Steel Lath Machines. Drop Presses, Draw Benches, and Special Machinery of all descriptions.

DOUBLE CAM BRAKE.

NO. 2 FOOT PRESS

Has 18 in. throat, punches ⅛ in. hole in ⅛ in. stock. Can punch up to 2 in. holes in thin stock. Worked by foot or hand power or both. Horn allows for punching pipe; also has gauge for spacing holes.

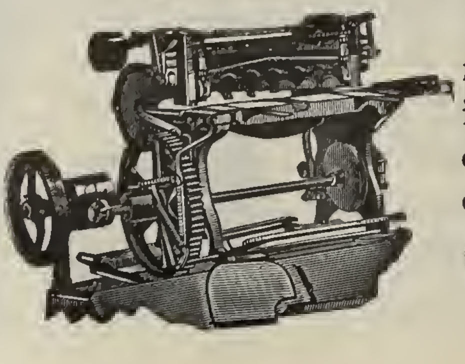


Good one and always gives good satisfaction. Send for price.

R. M. CLOUGH, - - Tolland, Conn.

POWER SHEAR

For Squaring, Trimming and Slitting No. 6 Or ⅛ Plates and lighter Gauges. Made in Lengths up to 11 ft.



The most practical and powerful shear on the market. Has all improvements. Write for circulars descriptive of this and 100 other sheet metal working tools.

BERTSCH & COMPANY.

CAMBRIDGE CITY, IND., U. S. A.

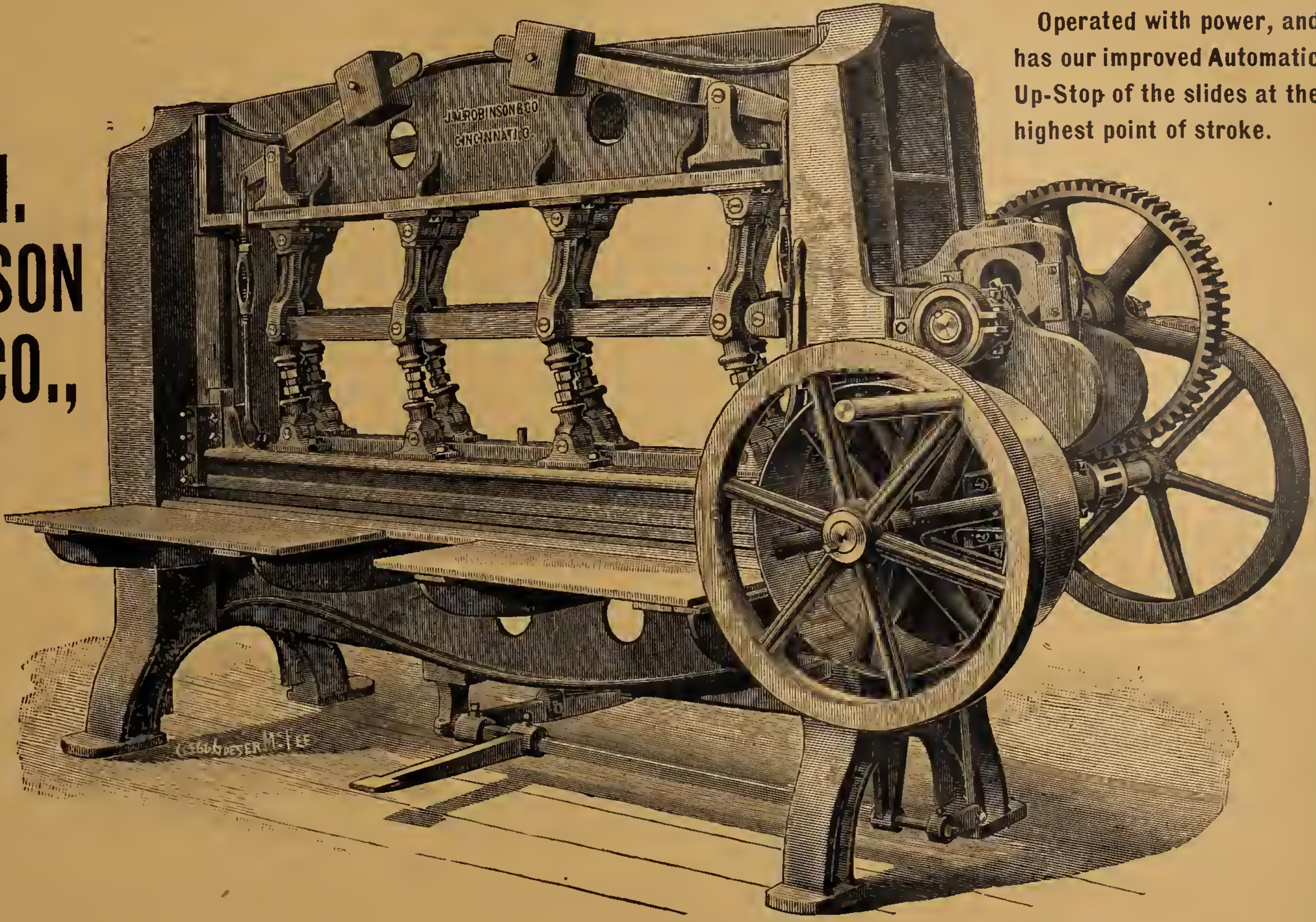
Agents: MERCHANT & CO., Philadelphia, Pa.

IMPROVED

"V" Crimping and Corrugating Machine.

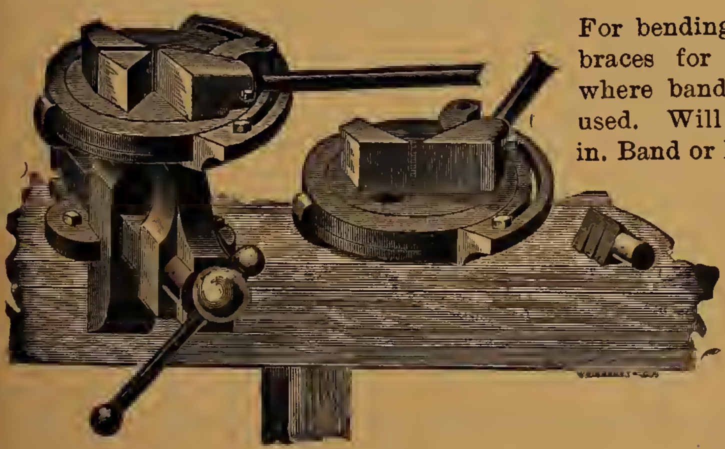
6, 8, 10 and 12-Foot Lengths.

Mfd. by
THE
J. M.
ROBINSON
MFG. CO.,
225-229
W. 2d St.,
Cincinnati,
Ohio.



Operated with power, and has our improved Automatic Up-Stop of the slides at the highest point of stroke.

A New Bending and Forming Tool



For bending and forming stays and braces for cornice or other work where band iron or steel are to be used. Will bend any shape ¼ x 2 in. Band or Bar.

THE KEENE
BRAKE

AND SHEET METAL
WORKING MACHINERY
A SPECIALTY.

GEORGE C. KEENE & CO., - Cincinnati, O.

SHOVEL MACHINERY.
We build complete equipments and control the latest patented machines for this work.

TIN CAN MACHINERY.
We make the very latest improved machinery for manufacturing cans and pieced tinware.

STEEL RANGE MACHINERY.
Recognized leaders for machinery and dies for oil and gas stoves, and gas and steel ranges.

For further particulars write
THE TOLEDO MACHINE & TOOL CO., Toledo, Ohio, U. S. A.
SELIG-SONNENTHAL & CO., Agts., London, England.

20th Century Groover
for Hand Power. We also make them for Belt Power.

20th CENTURY GROOVER, Handiest out.

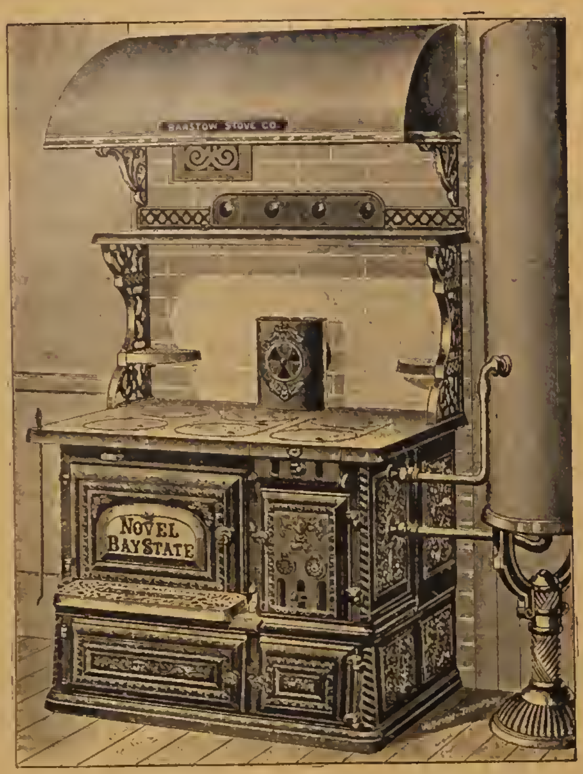
Operated from one position. Automatic knock-out and *Quick Return.* Grooves 22 gauge.
Write for circular. Made by
W. A. WHEELER, Indianapolis, Ind.

IMPROVED
Patent Automatic Can Body
Double Lock
SEAMING MACHINES
COMBINATION PRESSES and DIES,
SHEET METAL TOOLS.
W. J. GORDON,
218 New Street,
PHILADELPHIA, PA.

★ SAWS ★

Our Star Hack Saws are now used in nearly all Iron-working Shops the world over. They are equally useful for farmers and men in all departments of life. They will cut iron and wood equally well. A nail does not dull them at all. One blade, which costs five cents, will cut off an inch square bar of iron 200 times without sharpening. We have cut off such a bar 387 times with one blade. All hardware dealers will furnish these saws. If not, we will send one steel frame and six blades by mail, prepaid, on receipt of $1.00.
All good blades are stamped with a ★

MILLERS FALLS CO., 28 Warren St., N. Y.



NOVEL BAY STATE.

Right or Left-Hand Fire. Square Oven.
Removable Grate. Detachable Nickel.

Barstow Stove Company,
NEW YORK PROVIDENCE. BOSTON.

TAYLOR OLD STYLE is not made to compete in price with its imitations.

It is made to supply the steady demand of experienced roofers for the best that can be made.

N. & G. TAYLOR CO.,
Sole Manufacturers,
PHILADELPHIA.

THE GREAT CHURCH LIGHT

is made to fit all conditions. All styles from the plainest to the most elaborate. All we know about church lighting is yours on request.

I. P. FRINK, 551 Pearl St., New York.

L. & R. WISTER & CO.,
Bullitt Building, Philadelphia.
Dunbar Foundry Pig Iron.
Dunbar Connellsville Coke for Foundry Use.
American Sheet Iron Co.'s Sheet Iron.
American R. G., cleaned, of uniform black color.
Dealers in all kinds of Iron and Steel Scrap.

BRUCE & COOK.
TINNERS'
TOOLS and MACHINES.
TINNERS'
SUPPLIES.

186, 188 & 190 Water Street, and
248 & 250 Pearl Street,
NEW YORK.

UTICA PIPE FOUNDRY CO.

"UTICA PIPE IS THE BEST." Cast Iron Soil Pipe. Cast Iron Water Pipe. Plumbers' Supplies and Lead Pipe.
CHARLES MILLAR & SON CO., Selling Agents, Utica, N. Y.

HUB RANGES

H U B If you want the best line; the line with the most attractive and progressive selling features, look into the merits of the

Hub
Line of Ranges,
Steam and Water Heaters;
Hot Air and Combination Furnaces.

SMITH & ANTHONY CO., Boston.

Building a Business

on meritable goods is the motto of the man who handles the Glenwood line. He knows their reputation and quality. He knows that every part of a Glenwood range or heater is fitted and finished like a piece of machinery. He knows that every Glenwood sold means a satisfied customer–that's why it's business and a pleasure to handle

GLENWOODS.
Write the Weir Stove Company, Taunton, Mass.

SOLDER

Our Various Brands:
ADMIRAL, FORT PITT, FREEHOLD,
Are made from strictly New Metals and the Proportions Guaranteed.

McCLURE & CO.,
Manufacturers of Tin Plate,
PITTSBURGH, PA., 211, 213 and 215 Second Ave.
PHILADELPHIA, PA., 115 North 7th Street.

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The Metal Worker

A WEEKLY JOURNAL OF THE
ROOFING, STOVE, CORNICE, TIN, PLUMBING AND HEATING TRADES.

With which is Incorporated The Stove and Tin Trade Journal, the Sheet Metal Builder, and Metal.

LVII.
BER 19.

NEW YORK AND CHICAGO, MAY 10, 1902.

ONE DOLLAR A YEAR.
SINGLE COPIES 5 CENTS.

HALL'S BRASS
PIPE WRENCH.
Vith a GRIP that GRIPS without
Marring the Pipe.
lo. 1 Grips up to 1 inch. No. 2 Grips up to 2 inches.

OUR CATALOG OF ENGINEERS' AND STEAM FITTERS' TOOLS WILL INTEREST YOU.

ALWORTH MFG. CO. *Boston, 128 Federal St.*
New York, Park Row Bldg.

The Gorton Side Feed Boilers
FOR STEAM AND HOT WATER HEATING.
INVESTIGATE FOR YOURSELF.
Send for Catalogue and Prices.
GORTON & LIDGERWOOD CO.,
96 Liberty St., NEW YORK. Old Colony Bldg., CHICAGO.
77 Oliver St., BOSTON. Prudential Bldg., ATLANTA, GA.

STOVE LININGS
McLEOD & HENRY CO.,
TROY, N. Y.

AMERICAN STEAM and ALTITUDE GAUGES, POP SAFETY VALVES,
Heating Specialties. American Steam Gauge & Valve Mfg. Co., Bismark St., Boston, Mass., U. S. A.

BY THIS SIGN
your customer will know that he has selected the right place to buy a boiler, furnace or range. Most people have occasion but a few times in a lifetime to buy one of these articles. Don't make an enemy of him and lose his trade on other things you sell by selling him a poor article. ***Paragon Boilers and Furnaces*** are made right, sold right, and will operate perfectly.
ISAAC A. SHEPPARD & CO.,
NEW YORK. PHILADELPHIA, BALTIMORE.

POLLO BEST BLOOM
GALVANIZED IRON
Guaranteed—Apollo
lvanized iron—every
eet and part of a sheet.
To be perfect.
erican Sheet Steel Company, New York

With every line of
Stewart Stoves
we send attractive printed matter. It helps you sell and requires less explanation and time; and time is money, and STEWART STOVES are great sellers.
FULLER & WARREN CO., Troy, N. Y.
This Ad. changes every week.

NOTICE.
Silver, Nickel Platers and Brass Goods Mfrs.
MATERIAL FOR DRYING PURPOSES.
Write for prices to John Sommer's Son, 355-365 Central Ave., Newark, N. J.

FOLLANSBEE BROTHERS CO.,
328-330-332 Second Ave.,
Pittsburgh.
Galvanized and Black Sheets.
Sheet Copper, Conductor, Eave Trough.

Our sales of Follansbee Pure Iron Old Style increasing wonderfully; it is Iron Base, not steel. Makers Scott's Extra Coated and other Tin Plates.

Philadelphia, 133 Arch Street.
Chicago, 504 North Water Street.
Louisville, 7th and Magnolia.

CROSBY SPRING-SEAT
GLOBE and ANGLE VALVES, IRON and BRASS.
All working parts renewable without taking the valve from piping. All parts interchangeable. Guaranteed not to leak at high pressure. Send for circular.
Crosby Steam Gage & Valve Co.,
BOSTON: 95 Oliver St. NEW YORK: 78 John St. CHICAGO: 21 23 W. Lake St.

team Specialties.
LIEF and
EVATOR VALVES,
EAM TRAPS,
EAM AND WATER
DUCING VALVES,
NK TEMPERATURE
A No. 1 DAMPER REGULATORS
NOISELESS BACK
PRESSURE VALVES.
PUMP GOVERNORS,
STEAM and OIL SEPARATORS
CONTROLLER and
KIELEY AND MUELLER,
17 W. 13th St., • NEW YORK.

JENKINS BROTHERS' VALVES
Perfectly tight under all pressures of steam, oils or acids.
Warranted to give satisfaction under the worst conditions.
Received the Highest Award GOLD MEDAL At the Pan-American Exposition.
Insist on having the genuine stamped with Trade-Mark.
JENKINS BROTHERS, New York, Boston, Philadelphia, Chicago.

READ OUR "AD"
Page 13.
MAGEE FURNACE CO.,
Boston.

F.D.S.

ROUND OAK
Standard of America

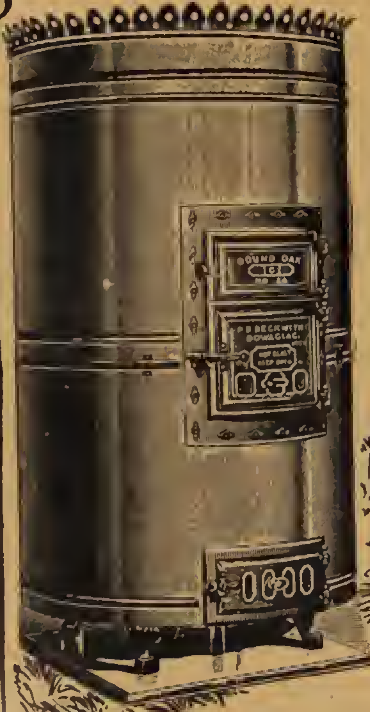
We make a

Round Oak
Room Heater

It heats by circulation.

It equalizes the heat in all parts of the room just like a furnace.

It is the most effective stove for heating school-rooms, halls, stores and other rooms ever devised.



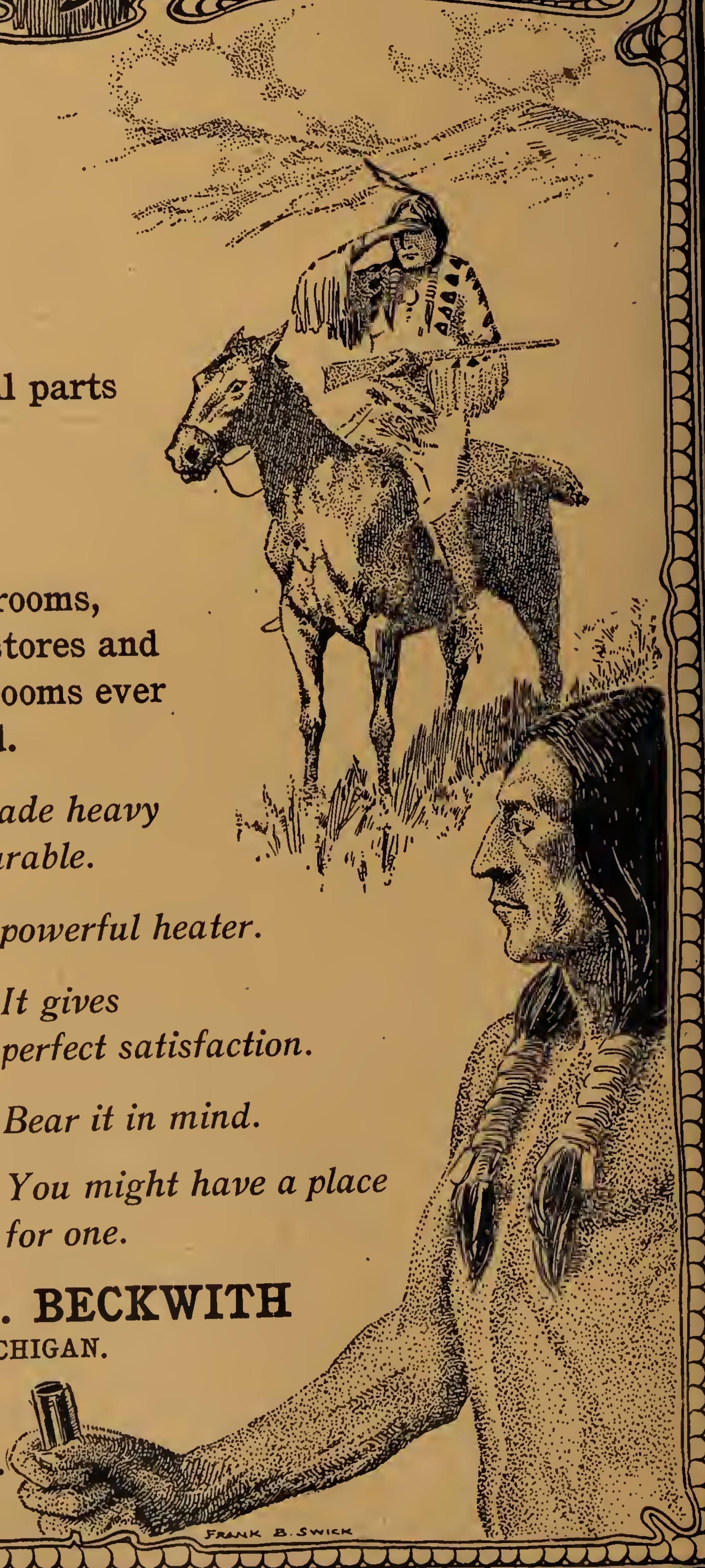
It is made heavy and durable.

It is a powerful heater.

It gives perfect satisfaction.

Bear it in mind.

You might have a place for one.



ESTATE OF P. D. BECKWITH
DOWAGIAC, MICHIGAN.

Makers of
Good Goods only.

19

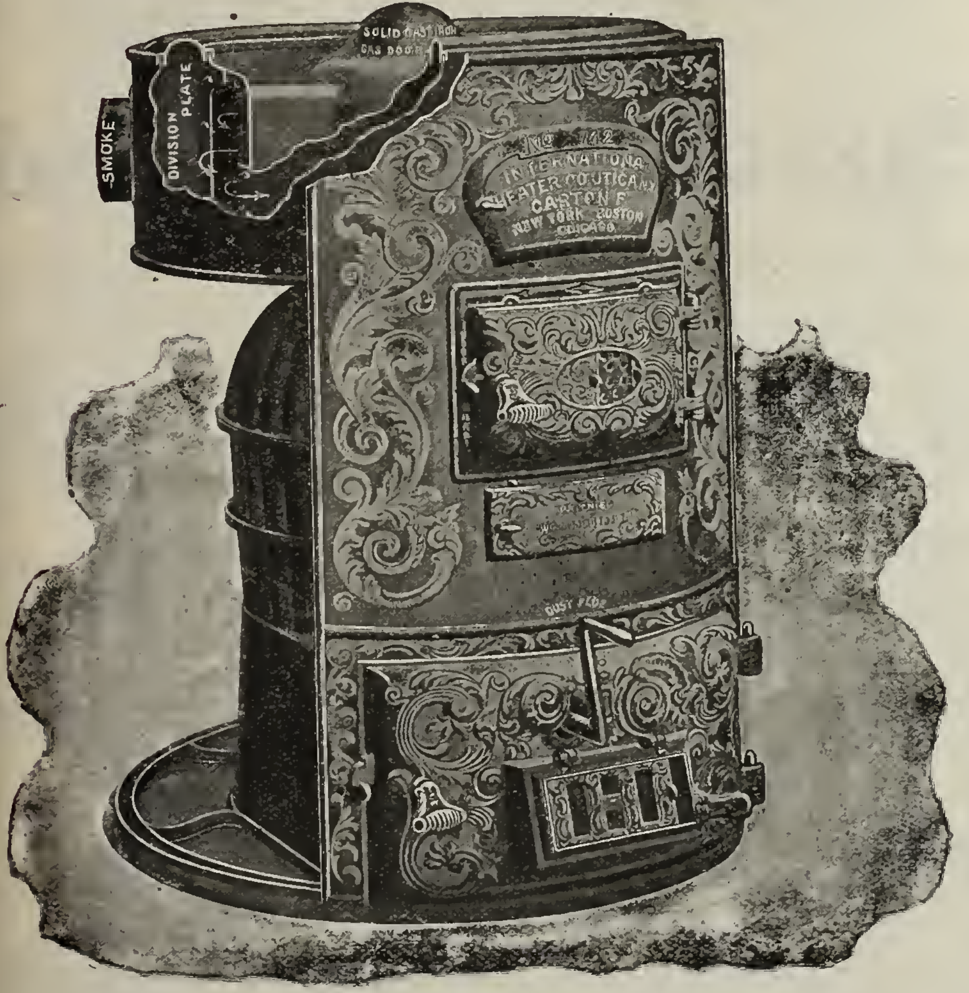
Rogers & Wells - Chi-

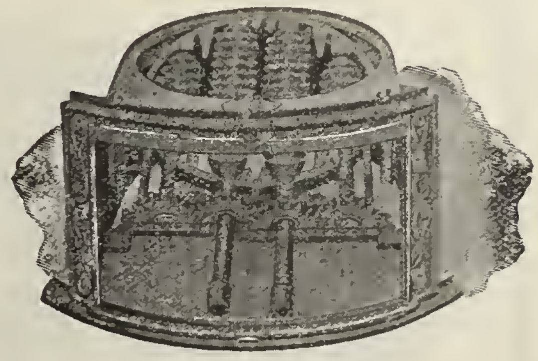
FRANK B. SWICK

It is far easier to effect a single sale than to gain a permanent customer. Glue them to you—make them stick—sell good goods—CARTON FURNACES, for instance.

CARTON "F"

WARM AIR FURNACE





There are many "talking points" about this heater.

One thing may be emphasized strongly:

No furnace in the market presents more efficient fire surface.

Look at the gas dome—a one-piece casting—no chance for an argument here.

MODERATE IN PRICE.
THOROUGHLY EFFICIENT.

CATALOGUE OF OUR ACETYLENE GAS MACHINE WILL INTEREST YOU.

International Heater Co.,

UTICA, N. Y.

BOSTON. NEW YORK. CHICAGO. DENVER.

THE LARGEST MAKERS OF HEATING AND LIGHTING APPARATUS IN THE WORLD.

First Prize, Paris, 1900

Our previous advertisement this publication presented “New Staple-Garland,” steel ran for soft coal or wood, and “Savoy-Garland,” for hard c or wood.

We now call your attention to

“New Special-Garland,

SIX HOLE STEEL RANGE, FOR SOFT COAL OR WOOD.

Being a plainer finished range than the “N Staple-Garland,” but possessing the same de able and durable features, and a thoroug dependable construction in every way.

Made for hard coal or wood under the nam

“Signal-Garland.”

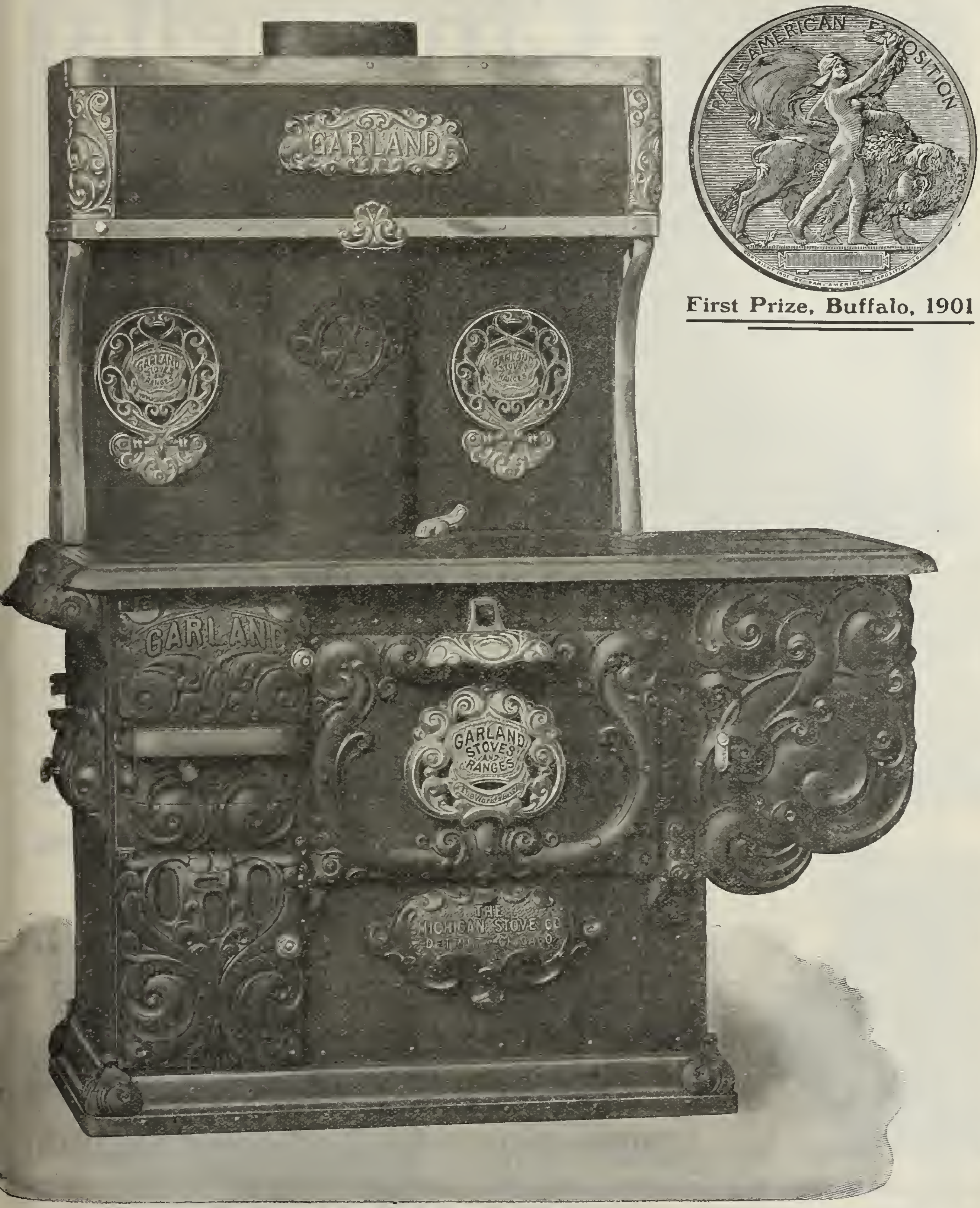
Our line of Steel Ranges and Steel Cooks 1902 is more complete than ever, and compri patterns that will meet the demand of all s tions of the country.

GARLAND STOVES AND RANGES
“The World's Best”

The Michigan

Largest Makers of Stove

DETROIT.


GARLAND
GARLAND STOVES AND RANGES
GARLAND
GARLAND STOVES AND RANGES "The World's Best"
THE MICHIGAN STOVE CO DETROIT CHICAGO
PAN-AMERICAN EXPOSITION

First Prize, Buffalo, 1901

tove Company,

nd Ranges in the World,

CHICAGO.

GARLAND STOVES AND RANGES
"The World's Best"

Cinderella
Steel Ranges
REPRESENT
The Best Materials,
The Best Construction,
The Best Workmanship.
THEY ARE
The American Standard for Excellence.

ALL STYLES AND SIZES AT
MODERATE PRICES.

We would be pleased to send our catalogue.

STOVES AND RANGES CINDERELLA NEVER FAIL

PITTSBURGH STOVE & RANGE CO.,
PITTSBURGH, PA.
WESTERN SALES AGENT,
W. D. Sager, 38 and 40 Michigan St., Chicago, Ill.

STOVES AND RANGES CINDERELLA NEVER FAIL

MODEL STOVES AND RANGES
take the lead all over
the United States.
SEND FOR PRICES.
MANUFACTURED BY
The Home
Stove Co.,
INDIANAPOLIS, IND.

MODEL LEADER
STEEL COOK
EXCELS THEM ALL

REFRIGERATORS,
BLUE FLAME OIL STOVES,
GASOLINE STOVES.

LARGEST JOBBERS
in
NEW ENGLAND.

GAS RANGES,
FURNACES, STOVES,
RANGES AND REPAIRS.

HENRY N. CLARK CO., 56 and 58 UNION ST., Boston, Mass.

BRAND STOVE CO.
STOVES, RANGES and
FURNACES.
SEND FOR CATALOG.
MILWAUKEE, WIS.

OUR

CATALOGUE,

SHOWING

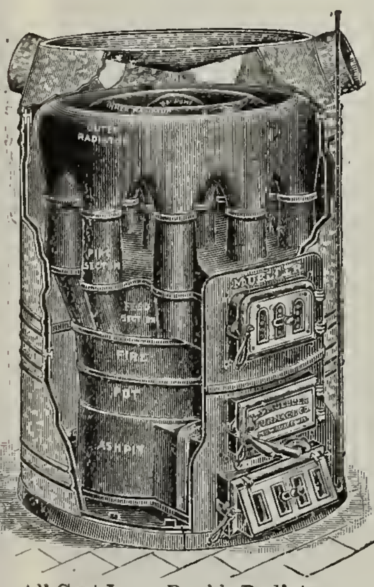
GAS RANGES
CAST RANGES
STEEL RANGES
STEEL COOKS
HOT PLATES
CAST and STEEL
HEATERS

WILL BE FURNISHED FOR THE ASKING BY

Enterprise Stove Co., VINCENNES, IND.

EXPERIENCE

has taught us that Quality is the principle on which to build a reputation. Hence our success.



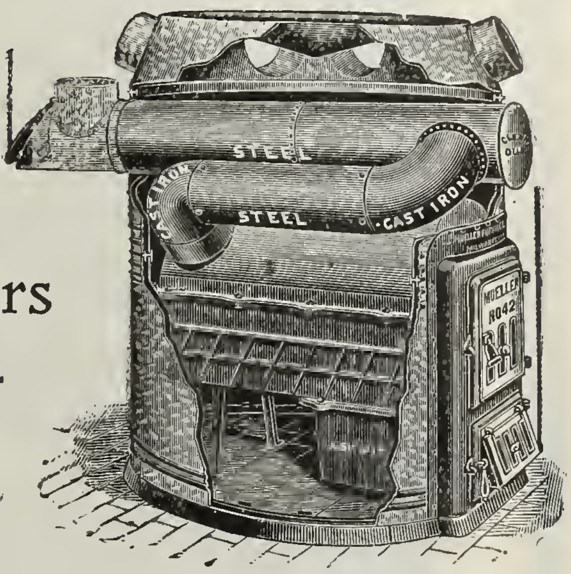
All Cast Iron—Double Radiator.

MUELLER

Furnaces and Boilers

ARE UNEQUALLED.

Write for Catalogue and Prices.



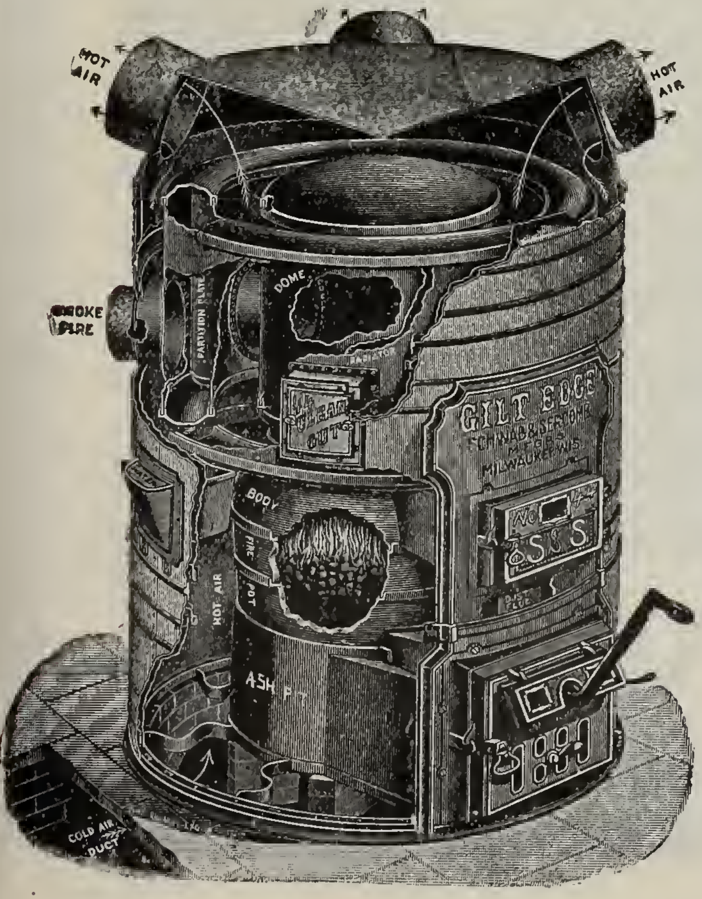
For Long Wood.

Everything in the Heating Line.

ESTABLISHED 1857.

L. J. MUELLER FURNACE CO.,

190 Reed St., Milwaukee, Wis.



Gilt Edge Warm Air and Combination Heaters

have merits that are all their own. They are made in a large variety of styles and sizes, each adapted especially to a certain class of fuel. Our line is "gilt edge" in every sense of the word. Every furnace we make is correctly made in accordance with right principles, and the price is right. Kindly write us for catalogue.

R. J. Schwab & Sons Co.,
Milwaukee, Wis.

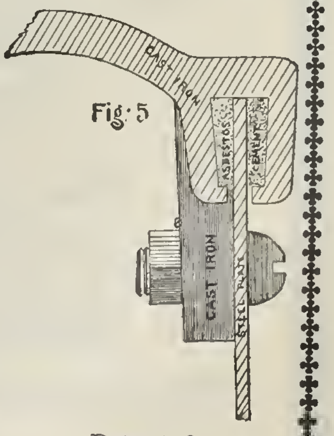


Fig: 5

Patented.

The Keystone Joint used on Gilt Edge Furnaces is the only permanent gas-tight steel and cast iron joint on the market.

Moore's QUICK OVEN Stoves

M TRADE MARK

HUSTLES HIM TO WASH HIS FACE

Mr. B. J. Norby of Cassville, Mo., writes as follows:

> "One of the Steel Stoves recently ordered was for Editor Charles Ray. He is very much pleased with it. Mrs. Ray thinks that there is no other worth having. She says it bakes so quickly that her husband hardly has time to wash his face before breakfast is ready."

The kind of satisfaction shown in this letter is the kind that counts big for future business. It reaches the neighbors and friends, and in the end makes many sales.

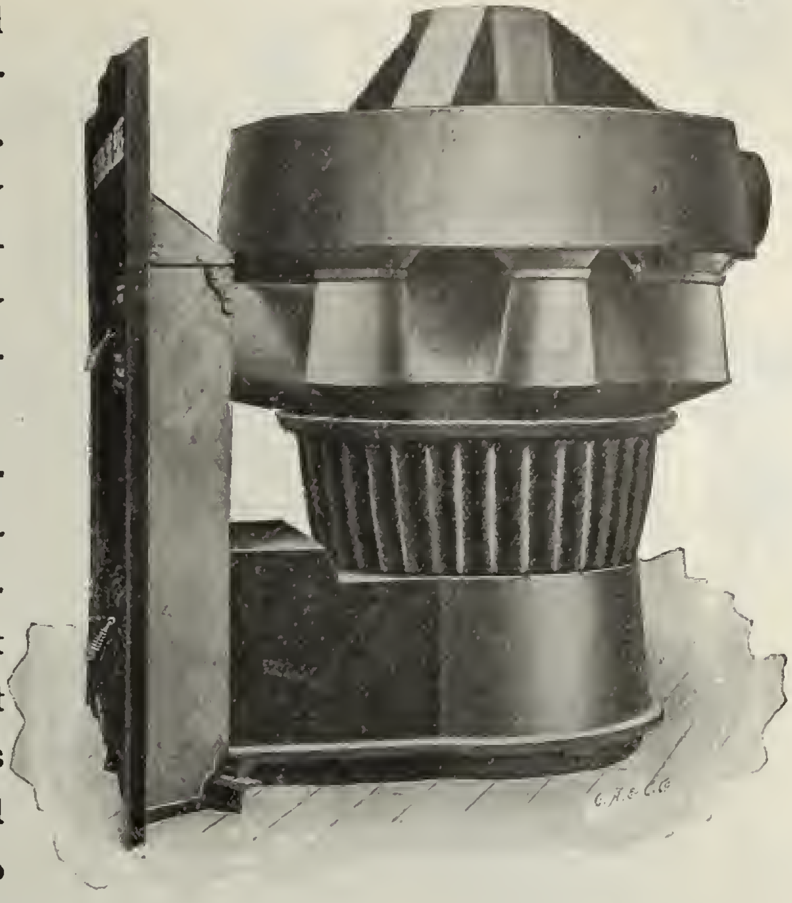
MOORE'S QUICK OVEN STEEL STOVES give this kind of satisfaction in abundance. That's what makes them

"The Easy Line to Sell."

Joliet Stove Works, Joliet, Illinois

HOLBROOK, MERRILL & STETSON, San Francisco, Sacramento, Los Angeles.

BOYNTON SCHOOL HEATER



The Boynton School Heater is manufactured for and sold to the TRADE only.

It is more extensively used by dealers and heating contractors than any Warm Air School Heater made.

We not only stand behind the heater for its capacity to warm very large volumes of air, but we have at our command the best engineering talent in this line of work to be had; and this important requisite to success is at the service of our customers.

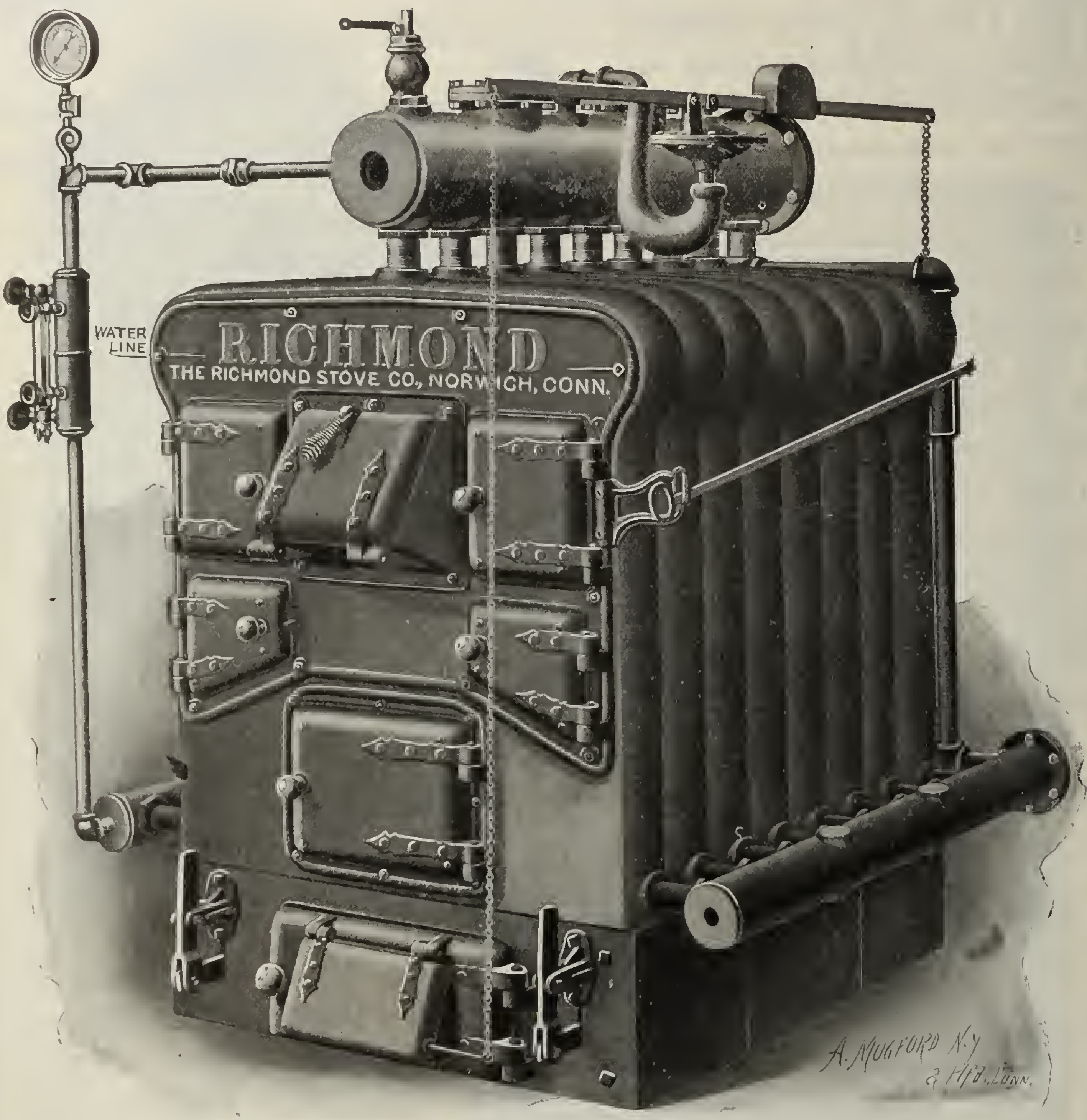
If there are school buildings to be erected or equipped with Heating and Ventilating plants in your vicinity, it will pay you to communicate with us AT ONCE. DON'T WAIT.

Of all School Heaters the Boynton is best adapted to the work: It is the largest, the heaviest, the most durable, has greatest radiating surface, is the only self-cleaning furnace, gas, smoke and dust tight, has the best grate, is no experiment, and we but repeat what the school people say of it.

THE BOYNTON FURNACE COMPANY,

New York Chicago

YOU WILL BE GLAD


WATER LINE
RICHMOND
THE RICHMOND STOVE CO., NORWICH, CONN.
A. MUGFORD N.Y. & H'FD. CONN.

TO KNOW SOMETHING ABOUT THIS BOILER

It is Different. It is New.
It is the LATEST and BEST Boiler out.

Send for Catalogue X. It will interest you.

THE RICHMOND STOVE COMPANY,

NORWICH, CONN.

NEW YORK: 737-38 Park Row Bldg.
PHILADELPHIA: 18-24 S. 7th St.
PITTSBURG: 210 Ferguson Bldg.
CHICAGO: Chicago Heater & Supply Co.
ST. LOUIS: Rumsey & Sikemeier.

THE H. B. SMITH CO.,

WESTFIELD, MASS., U. S. A.

Catalogue furnished only upon application to

Heating Contractors, Engineers and Architects

92 Pages. Size 9 x 12 Inches.

COTTAGE
BOILERS.

STEAM BOILERS (8 SIZES), 550 SQ. FT. RADIATION SUPPLIED.
WATER BOILERS (8 SIZES), 900 SQ. FT. RADIATION SUPPLIED.

PACIFIC COAST AGENTS

HOLBROOK, MERRILL & STETSON,

SAN FRANCISCO, CAL.

EUROPEAN AGENTS

AUG. EGGERS,

BREMEN AND NEW YORK CITY.

SALESROOMS:

THE H. B. SMITH CO.,

133 CENTRE STREET,
NEW YORK.

510 ARCH STREET,
PHILADELPHIA.

Royal Heaters.

HART & CROUSE CO.,

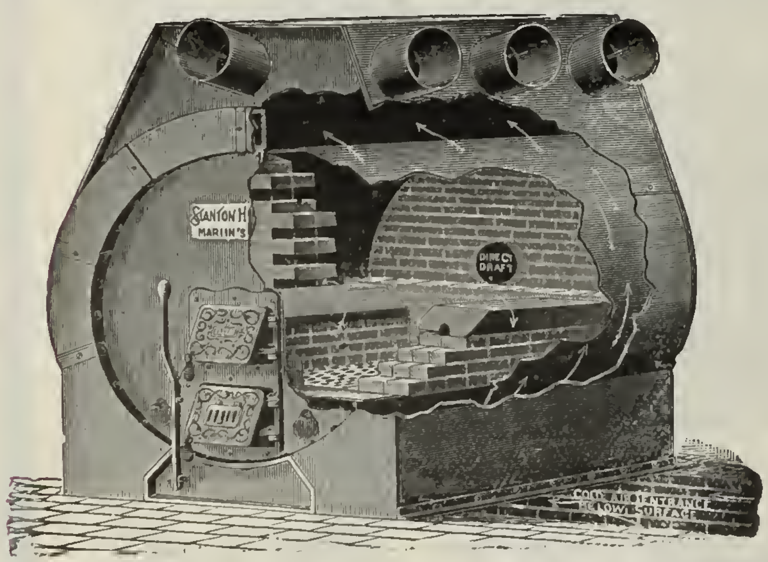
235 Water St., New York.
78 Lafayette St., UTICA, N. Y.
79 Lake St., Chicago

The Leading Line of Heating Apparatus.

HOT WATER,
STEAM,
HOT AIR.

The Stanton Seamless Heater,

PORTABLE CASED.



Louisville, Ky., April 5, 1901.

The Stanton Heater Co.,
Martin's Ferry, Ohio.

Gentlemen:—Your favor of the 3d inst. is received asking our experience with the Stanton Heater which you put in for us during the Fall of 1899. In reply we will say that it gives us pleasure to express our entire satisfaction with this Furnace. While we have had no severe weather this winter there have been several quite cold snaps, but our offices have been very comfortably heated, and our coal bill (Pittsburgh coal) has been quite moderate compared with other Heaters we have used.

The satisfaction the Heater has given us can be best expressed by saying that we have not heard the Furnace mentioned once this winter. You can see, therefore, that we have had absolutely no cause for complaint.

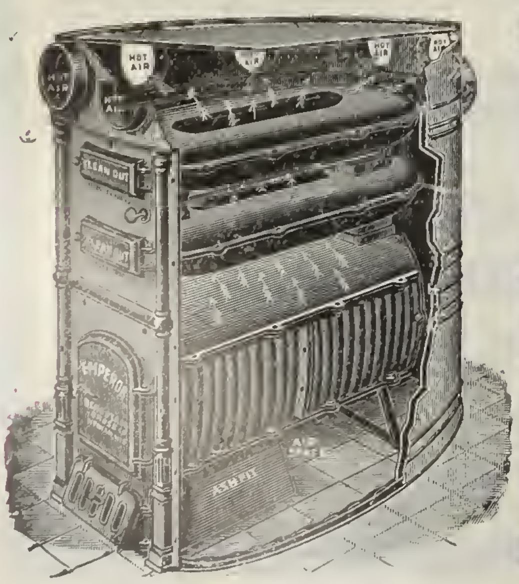
Yours very truly,
ROBINSON-HUGHES & CO.

SEND FOR CATALOGUE.

THE STANTON HEATER CO.,

Martin's Ferry, Ohio.

See our advertisement next week.



Emperor Furnaces

FOR WOOD.

Simple, Safe, Durable. Economical in Fuel.

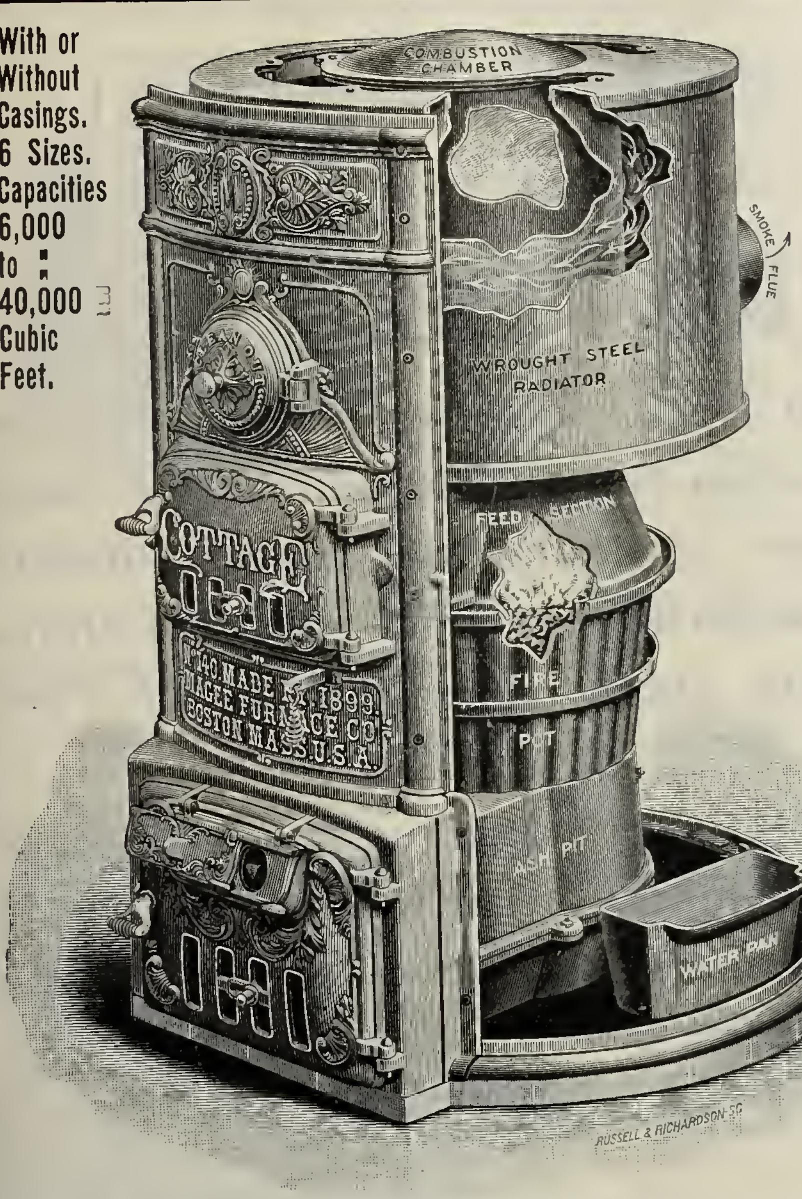
The Best and Cheapest Line of Wood Furnaces. . . .
Furnished for either Brick or Galvanized Iron Casing

SEND FOR CATALOGUE.

Bergstrom Bros. & Co.

NEENAH, WIS.

With or Without Casings. 6 Sizes. Capacities 6,000 to 40,000 Cubic Feet.



The Best Test

Of a furnace, with reference to its heating power, is the amount of space it will heat with a given amount of fuel under a proper state of combustion. We make the distinct claim for our

Magee Cottage Furnace

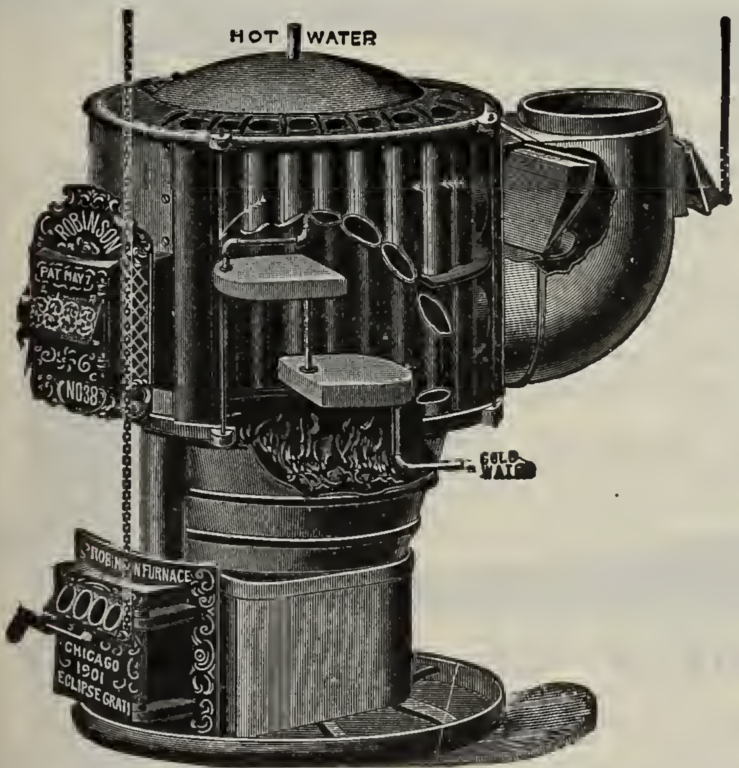
of superiority in this respect over any and all furnaces where a high grade furnace at a low price is desired. It is not offered in competition with inferior grades, designed especially for the cheapest class of work, but is a construction from which the greatest amount of heat can be obtained from the least amount of fuel, and at the same time add to your reputation.

Send for Catalogue.

Magee Furnace Co.,
BOSTON.

WESTERN AGENCY,
J. D. Lott & Co., 86 Lake St., Chicago, Ill.

Most complete line under one name in the United States.



The Robinson Tubular Warm Air Furnaces

give universal satisfaction whereever used

They are up-to-date in every respect and have many special features not found in other furnaces.

WRITE FOR CATALOG.

ROBINSON FURNACE CO., Chicago.

About three weeks ago a dealer sold a No. 8-20 "HOME WINTHROP" Range to be used in a bake-shop and also do the cooking for a small restaurant.

It was to replace an ordinary 8 inch range of another make that had not been entirely satisfactory, either as to quantity or quality of work done.

The old range required from 6 to 7 hods of coal every 24 hours

The "HOME WINTHROP" does more and better work with a little less than 3 hods in 24 hours.

We only claim that the "HOME WINTHROP" bakes with **ONE-THIRD** less fuel—this man says **ONE-HALF.**

DIGHTON FURNACE CO., Taunton, Mass.

SUPERIOR FURNACES

UTICA HEATERS

BUY
THE
BEST

EASILY OPERATED.

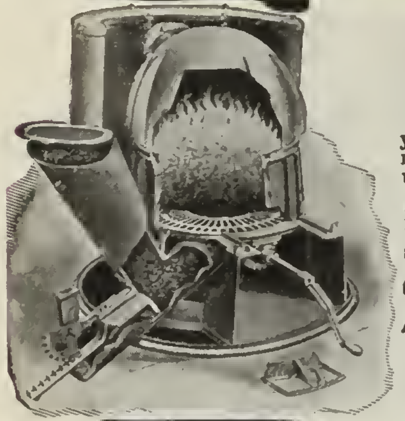
SUPERIOR Furnaces and UTICA Heaters require less care and attention than any other furnace on the market. There is no complicated system of drafts and dampers—merely pulling one chain in the living room will open the drafts, pulling the other chain checks the furnace. "A Child Can Do It!"

SUPERIOR Furnaces and UTICA Heaters respond quickly and effectively to change of dampers. They're built that way.

Ask for catalogue and discounts. They're interesting.

UTICA HEATER COMPANY,

Manufacturers, *UTICA, N. Y.*



IF YOU ARE NOT SELLING THE

Peck=Williamson Underfeed Furnace

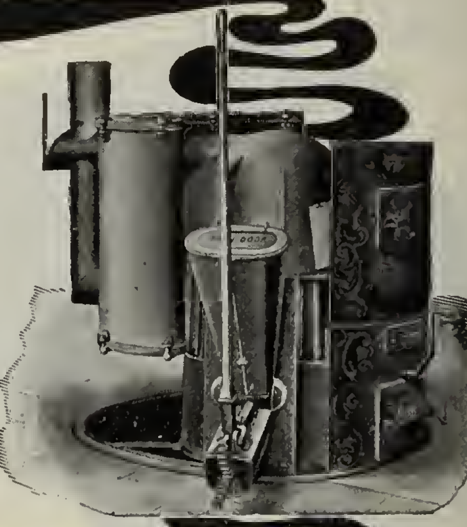
you have not the trade and are not making the money you might Just a pull or two of the lever feeds the new coal from underneath.

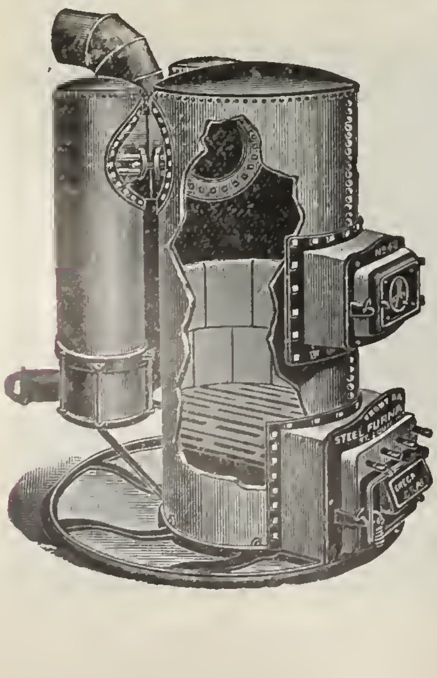
The Underfeed Furnace consumes less fuel than any other furnace ever built. The coal is burnt more slowly. All the heat units from it, as well as from the smoke, are utilized and all smoke eliminated.

Our handsome booklet explains its splendid heating qualities and coal saving.

You may have this booklet and our special plans for selling. Ask for booklet about our Laundry Dryer also.

THE PECK-WILLIAMSON COMPANY,
CINCINNATI, OHIO.



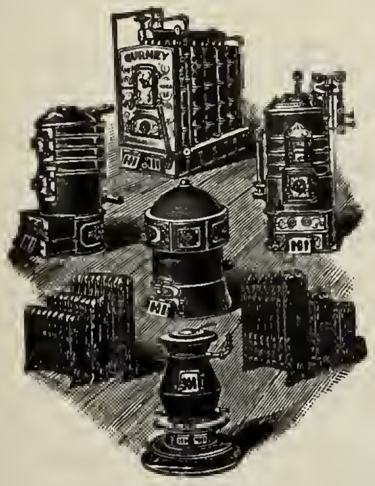


A FEW POINTS OF SUPERIORITY

Fire pots are of fire clay tiling and never burn out.
Radiator surface in proportion to grate surface unusually large.
Only absolutely gas tight furnace made.
Novelty of construction makes an easy seller.
Tested for fifteen years.

Repairs are seldom necessary.
Are guaranteed to burn hard or soft coal.
No direct draft to warp out of shape, nor packed joints to leak gas.
Katalogue and prices will be mailed you upon application.

FRONT RANK STEEL FURNACE CO., 2301 to 2309 Lucas Ave., St. Louis, Mo.



The Financial Argument.

Some of the heaters on the market are not worth their price because better value can be secured for the same money. That's the great argument in behalf of

"GURNEY" HEATERS,

BRIGHT IDEA DORIC and 400 SERIES.

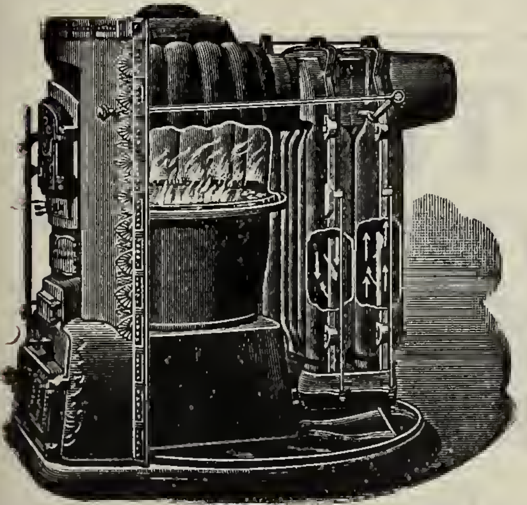
They furnish decidedly greater value yet they cost no more than ordinary heaters. Not only do we say so but a host of testimonials from present users corroborate this statement.

That one fact alone ought to be sufficient to induce every dealer who wants the fullest measure of business to handle "Gurney's." If you are in that class we shall expect to hear from you relative to an agency. Latest trade catalogue for the asking.

Gurney Heater Mfg. Co.,

74 Franklin St., Boston. *111 Fifth Ave., New York City.*

Western Selling Agents, James B. Clow & Sons, 358 Franklin St., Chicago, Ill.



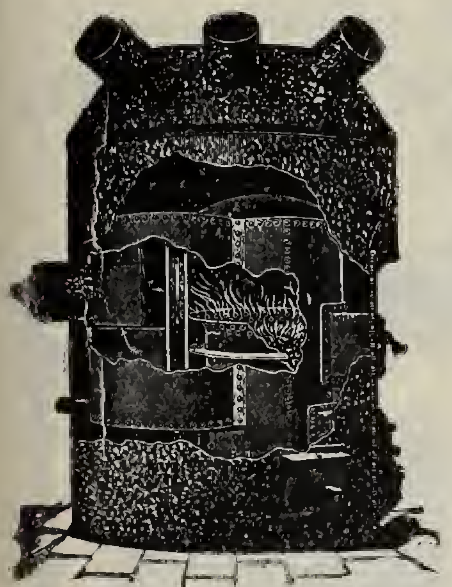
Bengal Furnace

IT IS All Cast Iron
Low in Price
Adapted to All Cellars
IT WILL Reduce coal bills
Please your customers
Do all we claim
IT WON'T Rust out
Disappoint
Heat the chimney

Are You a BENGAL Agent?

EASTERN SELLING AGENTS:
GURNEY & CO.,
Washington, Hanover and Elm Streets, Boston, Mass.

FLOYD, WELLS & CO., Royersford, Pa.
NEW YORK OFFICE, 210 WATER ST., R. W. HILLMAN, Manager.

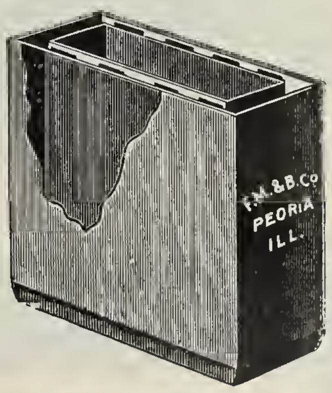


WEIR ALL STEEL GAS AND SOOT CONSUMING FURNACE.

THE HEAVIEST STEEL FURNACE MADE.

Absolutely gas and dust tight. A great heat-producer but a fuel saver.

MANUFACTURED BY
THE MEYER FURNACE CO.,
1300-1304 S. Washington St.,
SEND FOR CATALOGUE. PEORIA, ILLS.

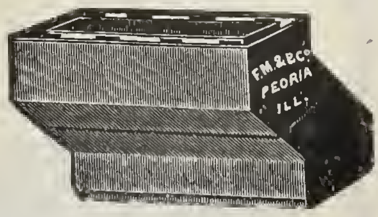


"The Handy Furnace Pipe."

MADE WITH A VIEW OF BEING SAFE.

The saving of labor in putting it up really makes it the cheapest hot air pipe on the market.

MANUFACTURED BY
F. MEYER & BRO. CO.,
SEND FOR CATALOGUE. PEORIA, ILLS.



STOVE REPAIRS

Bought from us entitle the purchaser to a 1000 Mile Book FREE on any railroad.

HAVE YOU RECEIVED ONE OF THEM? WRITE FOR PARTICULARS.

HEADQUARTERS FOR
WICK RINGS

For all Blue Flame Oil Stoves made—at startling low prices.

ELECTRIC BLUE FLAME COOKS

Are what you want for Summer trade.

CHAS. C. HEATH & CO., - - Philadelphia and Baltimore.

THATCHER RANGES

LIKE

THATCHER FURNACES

ARE

HIGH CLASS QUICK SELLERS.

MADE IN NEWARK.

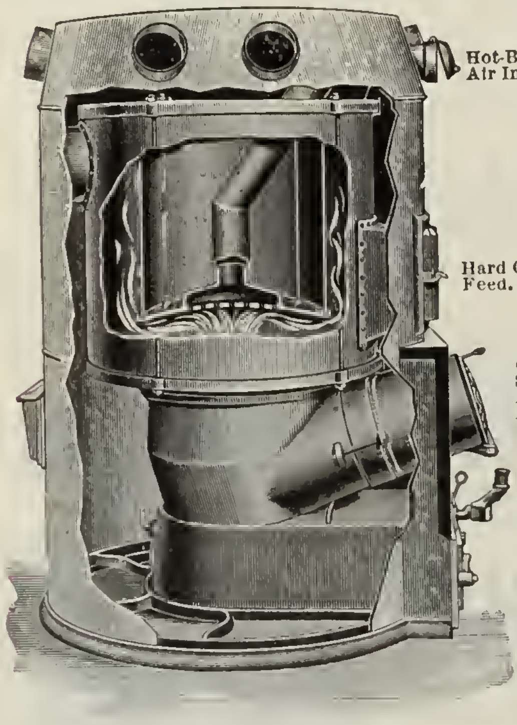
They are Durable and Very Economical!
They are Excellent Cookers and Quick Bakers!
They are Thoroughly Tested and Fully Guaranteed!

Thatcher Ranges Appeal to the Judgment of the Householder, and giving Full Satisfaction, are a Testimonial

TO THE DEALER.

WRITE FOR CATALOGUE.

THATCHER FURNACE CO., 240 WATER ST., N. Y.


Hot-Blast Air Inlet.
Hard Coal Feed.
Soft Coal Coking and Smoke-Burning Magazine.

THE PATRIC FURNACE

IS A COMBINATION OF

GOOD THINGS

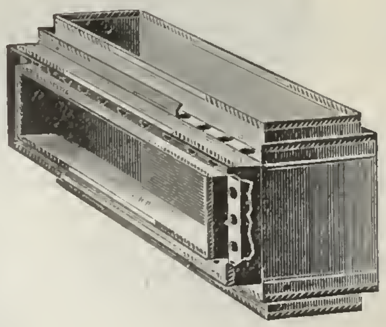
For the Dealer and User

Scientific and Simple in construction. The Coking and Smoke-Burning is a trade-winner. Very economical. Has an efficient Hot-Blast. Exceedingly durable. A success for 29 years. Easy to sell. Easy to operate. Easy to install.

Let us send you a catalogue that tells you all about it.

THE PATRIC FURNACE COMPANY,
SPRINGFIELD, OHIO.

FURNACES · **EXCELSIOR HEATING SPECIALTIES** · PIPE



WE ARE MAKING

Very Low Prices

on our full line for present and future deliveries and solicit

Your Inquiries

Our Stove Pipe and Elbows, also Furnace Pipe are the Best made.

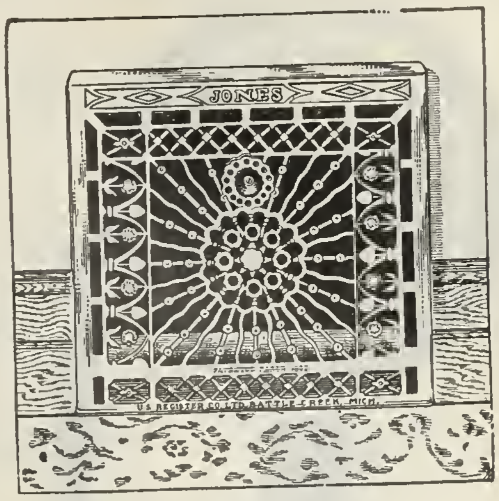
THE EXCELSIOR PARLOR ELBOW.

ELBOWS · **EXCELSIOR STEEL FURNACE CO.** 38-40 W. MONROE ST.-CHICAGO. · REGISTERS

The Reason Why

The JONES Side Wall Register

IS THE BEST—


JONES
PATENTED
U.S. REGISTER CO. LTD. BATTLE CREEK, MICH.

Because—It has a double metal box with a ventilating air space between the inner and outer casing, therefore is absolutely FIREPROOF.

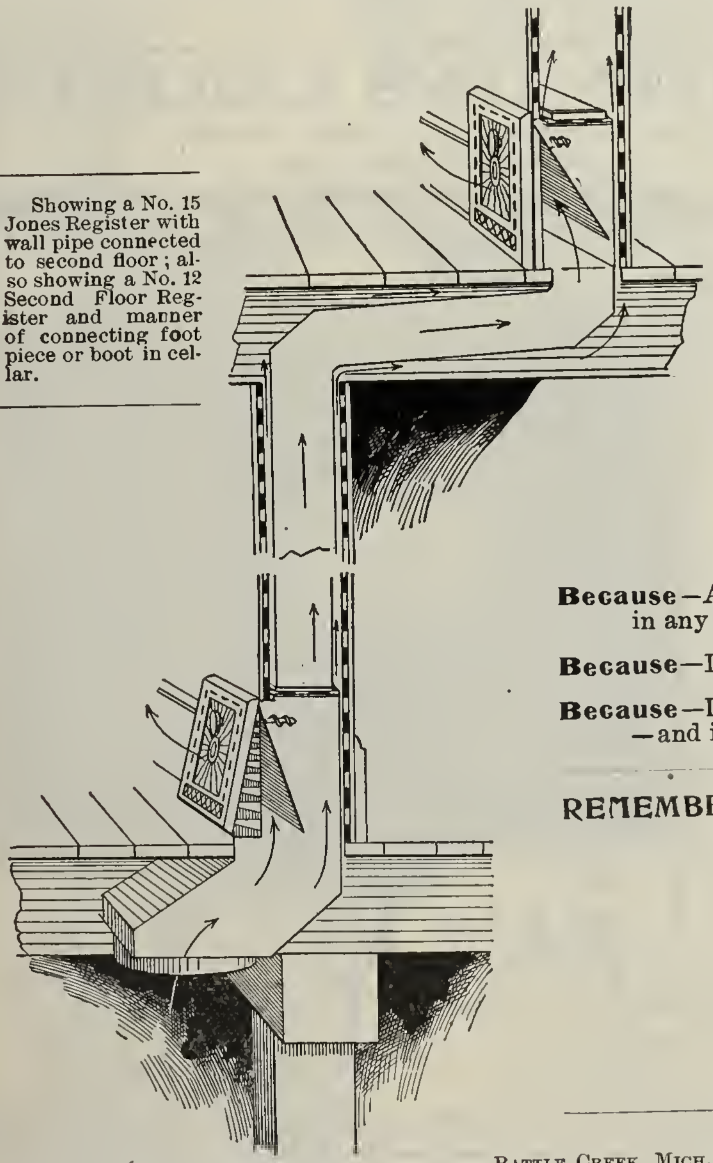
Because—It is NOISELESS; the deflector, which divides the flow of air, does not RATTLE when adjusted.

Because—It has 50% more capacity than any other similar register.

Because—Every room is supplied with a Deflector and Foot-warmer. See our double headers.

Because—The heat does not make the register two colors, as is the case where part of the front is used to divide the flow of hot air.

Because—Two rooms can be heated with one large basement pipe, in place of two smaller pipes—either two on the first floor, or one on the first and one on the second.



Showing a No. 15 Jones Register with wall pipe connected to second floor; also showing a No. 12 Second Floor Register and manner of connecting foot piece or boot in cellar.

Because—By reducing the number of basement pipes and enlarging them, there is less loss from friction and radiation in the cellar; cool cellars and warm rooms are the result.

Because—Less fuel is used by less loss of heat in the cellar.

Because—A furnace can be installed with half the number of pipes necessary where common registers are used; fewer elbows, angles, collars and dampers, and as a result—more head room in the basement.

Because—It obviates the necessity of cutting rich and expensive carpets.

Because—The finish is not worn off by walking over them, as is the case where floor registers are used.

Because—It is easily cleaned. During the Summer months it is not a receptacle for dust and sweepings.

Because—Aside from being thoroughly practical, it is an ornament in any room.

Because—It assists in selling and renting houses.

Because—It is made in eighteen (18) sizes, adapted to all sized rooms—and in all the different finishes to match other trimmings.

REMEMBER—It is NOISELESS.
It is FIREPROOF.
It is practical.
It has 50 per cent. more capacity than others.
The heat can be turned on the first or second floor as desired, without going to the basement.

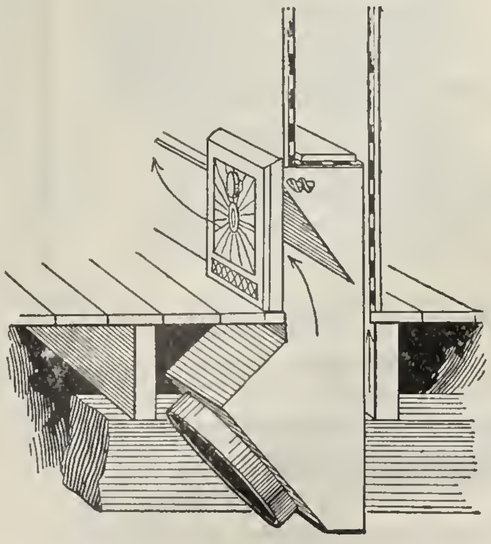
Battle Creek, Mich., April 1st, 1902.

The United States Register Co., Ltd., Battle Creek, Mich.

Gentlemen:—Replying to your inquiry regarding letter published by another Register Co. will say, in the first place, I never wrote the letter referred to, although my clerk may have done so.

We did use a ——— Register until we saw the Jones Register, but adopted the Jones owing to their having more capacity, a double ventilator register box, and because they didn't rattle when opening and closing them. The arrangement for operating the deflector of the Jones Register does not get hot, and by not using a part of the front for a deflector does not become discolored, as was the case with the register I turned down for the Jones.

Yours very truly, L. MOBLO.



No. 13 or No. 14 Register for First Floor.

Catalogues, Prices and Testimonials for the asking.

MANUFACTURED BY

The United States Reg. Co., Ltd.,

61-63 E. STATE ST., BATTLE CREEK, MICH.

HOT WATER AND HOT AIR

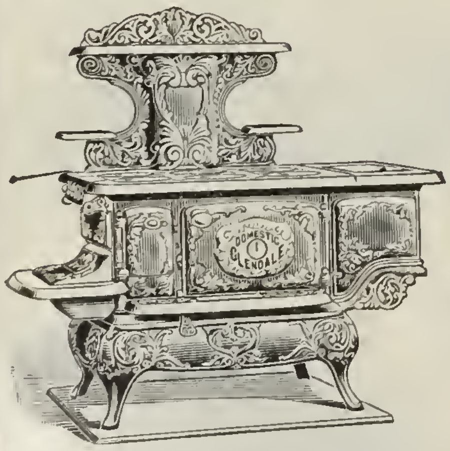
HEATING BY COMBINATION STOVES AND FURNACES.

Suitable for Large or Small Houses, Stores, Conservatories, Barber Shops, Hotels, etc., etc.

Heat Water Quickly.
Circulation is Positive.
No Joints inside to Leak.

THE NATIONAL PIPE BENDING CO
160 RIVER ST., NEW HAVEN, CONN.

GLENDALE
Stoves and Ranges



Manufactured by
SOMERSET STOVE FOUNDRY CO.,
SOMERSET, MASS.
Send for a Sample.

SCRANTON CORUNDUM & EMERY WHEEL CO.
1311-1315 Capouse Avenue, SCRANTON, PA.
Write for Catalogue.
OUR "BLACK DIAMOND" artificial abrasive wheels are especially adapted for
The Stove Trade
THEY ARE THE BEST.

STAMFORD FOUNDRY COMPANY

MAKERS OF

RANGES COOKING AND HEATING STOVES
HOT-AIR AND COMBINATION AIR AND
WATER FURNACES
LAUNDRY STOVES CONFECTIONERS' STOVES
CABOOSE RANGES ETC ETC

STAMFORD CONN

BOSTON GAS COOKER.
Low Priced, But Not Cheap.
OVEN 12 x 17 x 12 INSIDE.

One Extra Large Top Burner. Flush Top, A Perfect Baker.

RETAILS FOR $6 and gives the dealer an extra large profit.

SEND FOR PRICE.

MANUFACTURED BY
THE S. M. HOWES CO., 40, 42, 44 and 46 Union St., **BOSTON, MASS.**

"TORRID HEATER."
FOR STEAM OR HOT WATER.

It is Practical in Design.
It is Safe, Being Tested to 200 Pounds.
It is Easy to Manage and Keep Clean.
It is Durable.
It is Sectional and Easily Handled.
It has No Packed Joints.
It is Self-Feed or Surface Burning.
It has the Torrid Patent Rocking and Dumping Grate.
It is Low in Price.

SEND FOR CATALOGUE.

MANUFACTURED BY
W. H. DRAKE, No. 36 Clinton St., NEWARK, N. J.
Factory: Hackettstown, N. J.

Your Guarantee is Good,

If backed up by our line. We make many kinds and sizes of steam and hot water boilers, and you as a dealer ought to know all about this line. Let us send you our printed matter and post you on the standard line. Write to-day.

KEWANEE BOILER COMPANY

KEWANEE, ILLS.

WINCHESTER

"A man's mail will find him where no mortal can," (Knight) and so we like to add new names to our mailing list. Send us your name and get all the good things we send out from time to time about the celebrated "WINCHESTER" heaters. SMITH & THAYER COMPANY, Boston, Mass.; 106 Beekman St., New York.

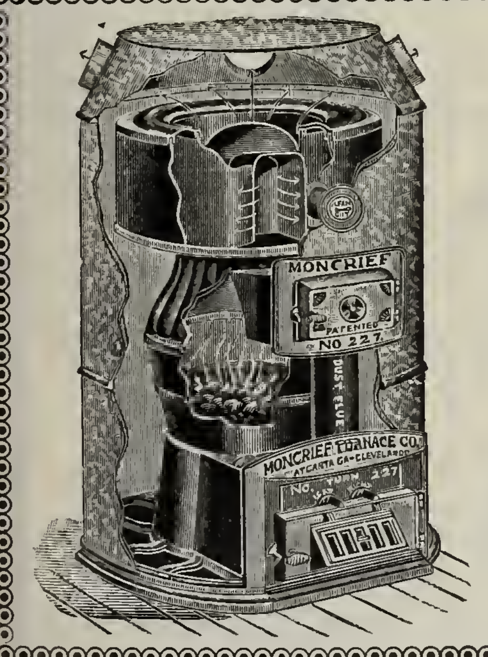
HEATER.

STARTING RINGS For All Kinds of BLUE FLAME STOVES.

Regular size, 35c. per doz.
Large " 50c. " "

In ordering mention diameter of rings and name of stove.

THE S. M. HOWES CO., 40, 42, 44, 46 Union Street, Boston, Mass.



MONCRIEF FURNACES

PORTABLE
and BRICK SET.

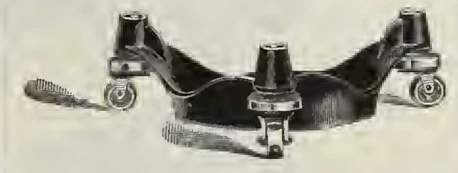
Unequalled in the Great Essentials---Simplicity, Durability, Economy, Capacity, Comfort.

NO BETTER MADE.

Write for catalogue. Special price to the trade.

MANUFACTURED BY

The MONCRIEF FURNACE & FOUNDRY COMPANY, ATLANTA, GA.



Going to put some new ranges on your sample floor this Spring? :: :: To make them show up just right they should be mounted on Independent Stove Casters :: :: :: They don't cost much. Write us. :: :: :: :: ::

INDEPENDENT
REGISTER CO.,
152 Champlain St., CLEVELAND, O.

I Will Give the Public the Benefit.

Having completed patterns for my 1902 line, I will close out my last year's pattern of the celebrated

400 LB. WILLARD STEEL RANGE for $15.00.

This is Less than 4c. per pound.

They have six 8 inch lids. Oven, 17 x 21 x 12. Top Cooking Surface, 30 x 36. Large Warming Closet. 15 gallon Reservoir. Duplex Grate, Burns Wood or Coal. Lined throughout with Asbestos.

EVERY ONE GUARANTEED. BUY NOW AND SAVE 100%.
Write for Free Descriptive Circular and Testimonials.
"FIRST COME—FIRST SERVED."

WM. C. WILLARD,

619-621 N. 4th St., - - St. Louis, Mo.

FOR **MICA**

Sheet, cut or uncut, Powdered and Flake,

WRITE TO

ASHEVILLE MICA CO.,
ASHEVILLE, N. C.

The Milwaukee Pattern Works.

Ornamental and Stove Patterns.

Sketches and Designs for Stove Work of all kinds.

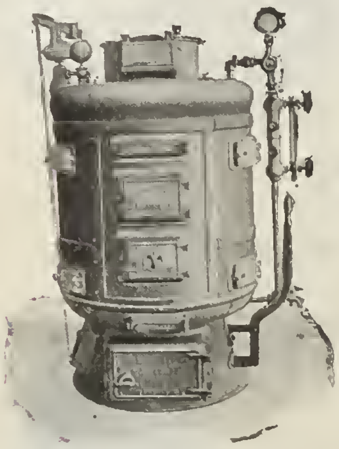
Correspondence Solicited.

505-507 Cedar Street. MILWAUKEE, WIS.

Pierce

BOILERS and RADIATORS

for Steam and Water Heating.



Pierce Touraine Steam Boiler.

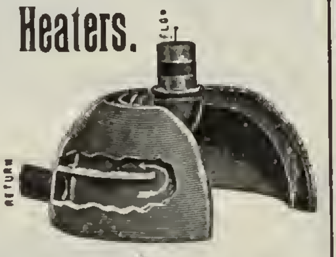
LARGE HEATING CAPACITY.
ECONOMIC IN FUEL CONSUMPTION.

Endorsed by the foremost Architects and Heating Engineers.
Write for New Illustrated Catalogue.

Pierce, Butler & Pierce Mfg. Co.,
Syracuse, N. Y.
New York. Boston. Philadelphia.

The Champion Hot Water Combination Heaters.

They Fit Any Furnace.



Base section when used without ring sections.

Ring Section.

These Heaters are made in five sizes diameter, and from 100 to 700 square feet radiation capacity.

Will heat those cold rooms or an addition to the building. Will increase the capacity of any furnace. Are cheaper than coils and will do more work.

Write for new circular. Manufactured by

FRANK D. STOLZ,
115 Lake St., Chicago, Ill.

ABC

IF YOU WERE ACQUAINTED
with all of the merits of the
"A. B. C." BLAST GATE

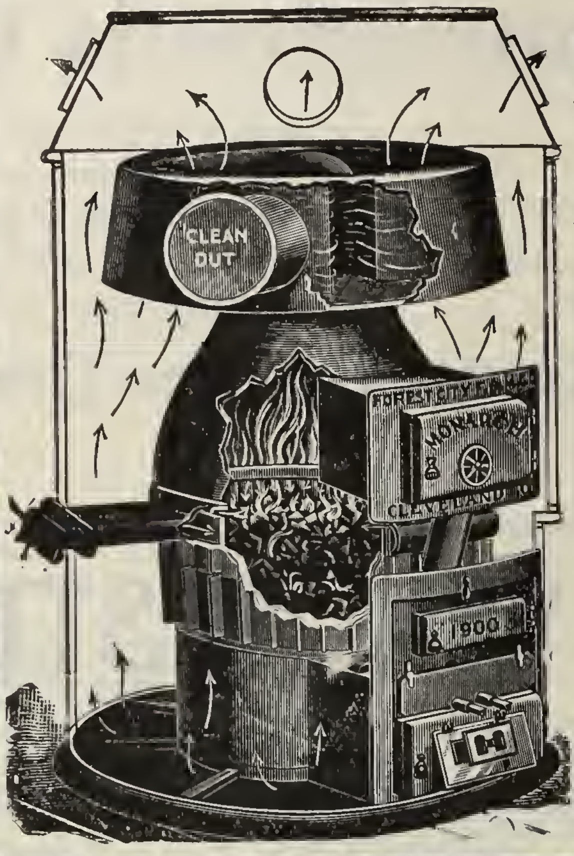
you wouldn't consider any other. It is one of infallible efficiency. So simple that it can't get out of order. So well constructed that it will last a life time.

Used for closing pipes supplying blast to furnaces, forges, boilers, etc.

Send for Particulars.

American Blower Co.,
DETROIT, MICH.
New York. Chicago. London.

ABC



Monarch Air Blast Furnaces.

All Cast Iron.
For Hard and Soft Coal.

Send for 1902 Catalog and discounts.

The Forest City Foundry and Mfg. Co.
81 Elm Steeet,
CLEVELAND, OHIO.

Gray Iron Castings to order. High grade only.

Champion and Marquart

Double Flue Ranges.

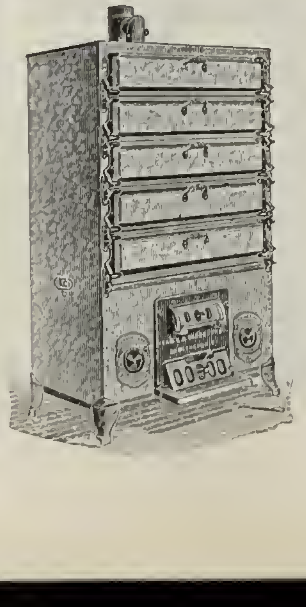
Only Double Flue Ranges in the Market. The Greatest Fuel Saver. Draw-Out Grate.

Handsomely Finished Throughout. Prices Within Reach of all.

CHAMPION
STEEL RANGE CO.,
CLEVELAND, O.

We are represented by the following houses:

Lee-Glass-Andreesen Hdw. Co., Omaha, Neb.
James Graham & Son, San Francisco, Cal.
Richards & Conover Hdw. Co., Kansas City.
Michigan Distributing Co., Lansing, Mich.
Chicago Stove and Range Co., Chicago, Ill.
Jacob Retterer, Chicago, Ill.
Corbett, Failing and Robertson, Portland, Ore.
Palmer Hdw. Co., Savannah, Ga.
J. M. Litchfield, New York, N. Y.
Kettlesen & Degetan, Chihuahua, Mex.
Moore-Bandley Hdw. Co., Birmingham, Ala.



Portable OVENS

FOR
CORE BAKING,
JAPANNING,
ENAMELLING, Etc.

OVENS FOR Bakers, Confectioners, Hotels, Etc.

Made in all sizes, single and double, for coal, wood, natural or artificial gas.

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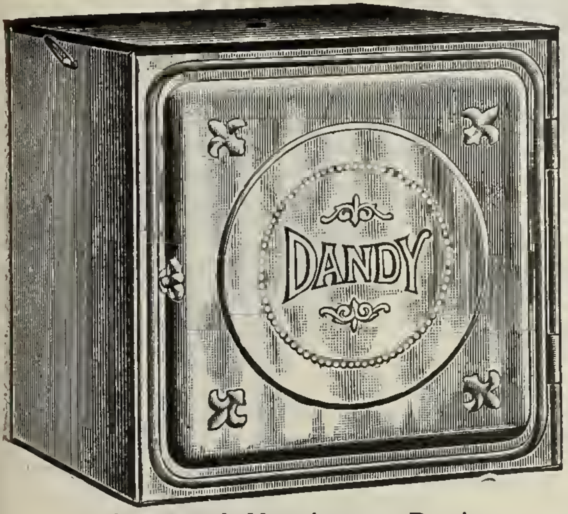
The G. S. BLODGETT CO., Burlington, Vt., U. S. A.



A New and Handsome Design.

THE

Dandy Oven.

A double oven, made of polished steel or tin, beautifully japanned top and front frame, drawn steel bottom rim, superior to the breakable cast-iron rims. All-wire oven racks. Adapted for cast-iron lamp stoves, tin stoves and gas hot plates. Send for price.

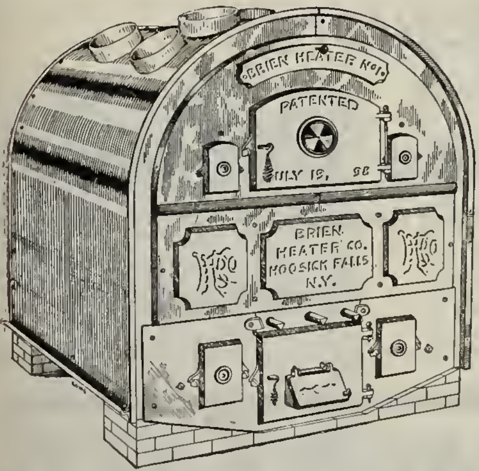
Dimensions, 12" by 12" by 12".

THE S. M. HOWES CO.,
40, 42, 44, 46 Union Street,
BOSTON, MASS.

Vance Boilers.

The most economical Steam and Hot Water Boiler on the market. Write for Catalogue and Price List.

VANCE BOILER WORKS,
373 Atkinson St., Geneva, N. Y.



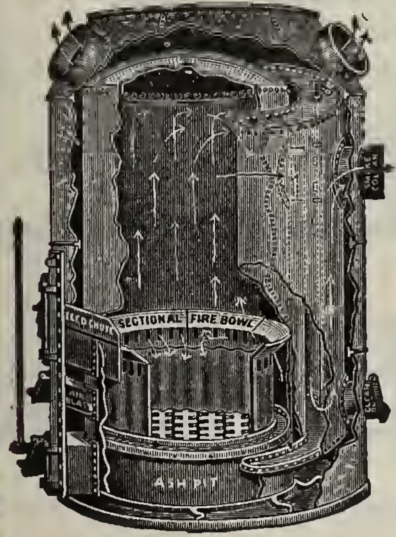
Brien Heater.

A perfect, all cast WOOD or COAL burner. There is no other Hot Air Furnace as low down as the "BRIEN."

Write for territory, catalog and prices.

BRIEN HEATER CO.,
HOOSICK FALLS, N. Y.

The Torrid Zone Furnace



is a trade winner because it has points of merit peculiar to itself that can be found in no other steel furnace. Our new catalogue is now ready to mail and a description of our Hot Air and Hot Water Combination Furnace can be seen in it. We furnish either the cast iron lining or the fire brick at the same price. Our Wood Furnace is called a powerful heater by those who use it.

CATALOGUE FREE.

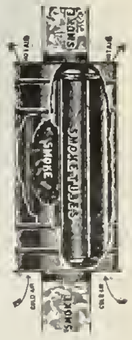
Lennox Manufacturing Company,
Eighth Ave. and Frederick St.,
MARSHALLTOWN, IOWA.

MICA

EUGENE MUNSELL & CO
MINERS & IMPORTERS
NEW YORK CHICAGO
218 WATER ST. 117 & 119 LAKE S

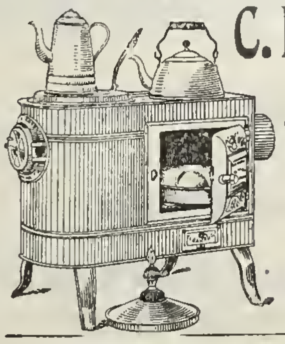
Common Sense Circulator and Radiator.

(Patent applied for.)



This Heater is so simple that its superiority over all others is plain. Being open at each end the cold air is taken in at the bottom, passing out at the top heated; producing a circulation unequaled by any radiator. Is easily cleaned or repaired. Takes the place of a joint of pipe. Diameter of casings, 10½ and 12½ inches. Send for prices.

A. C. SELLECK,
755-757 W. Madison St., CHICAGO, ILL.



C. H. Cosby's

PATENT AIR TIGHT BAKER AND HEATER.

Agents wanted in every town and city. Write for particulars.

C. H. Cosby,
423 W. Broad,
Richmond, Va.

By Thos. McNeil

THE STEAM AND HOT WATER FITTERS' TEXT BOOK.

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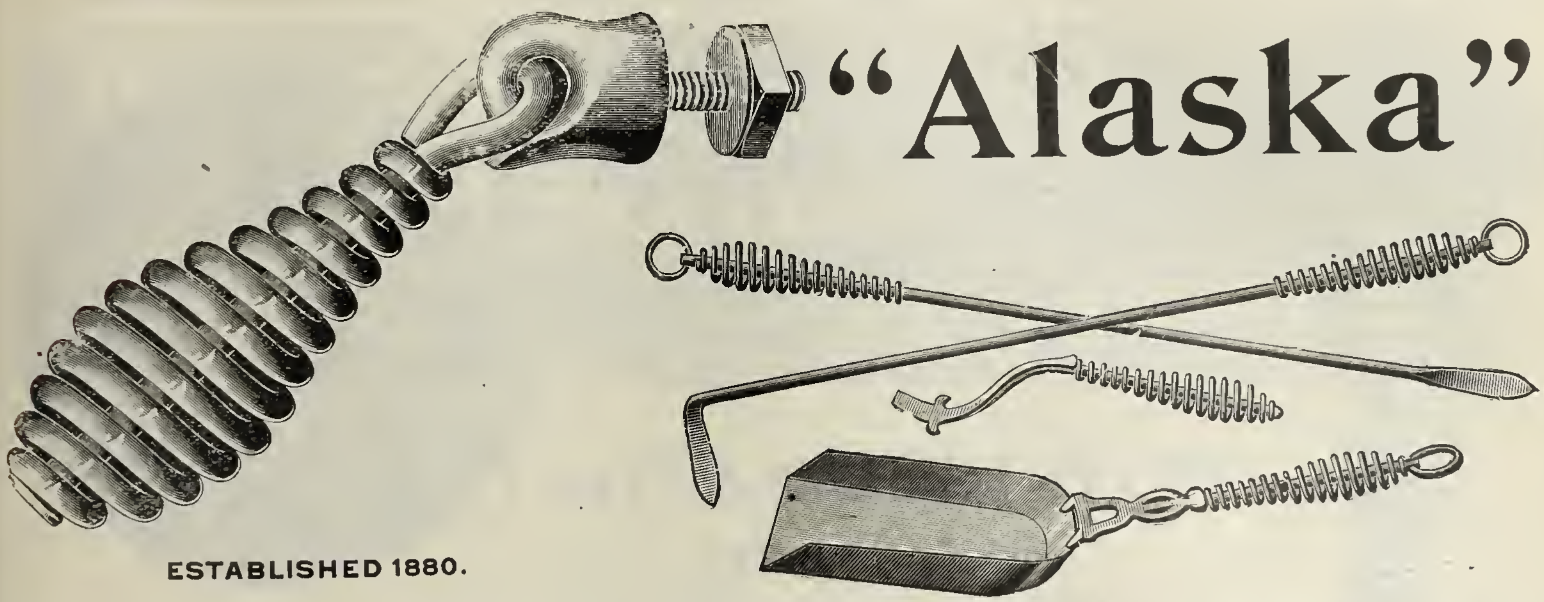

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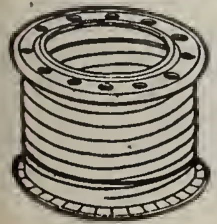

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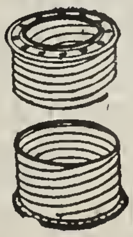

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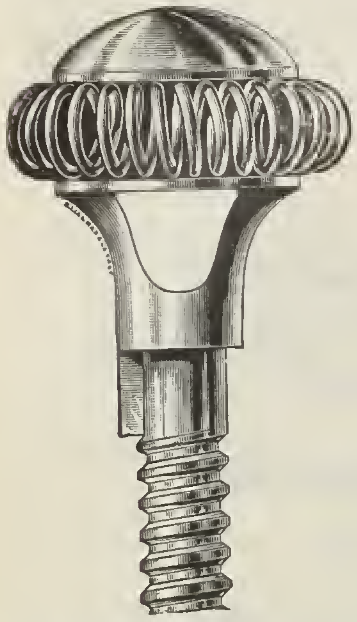

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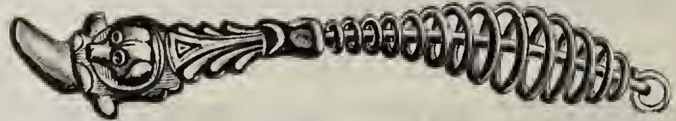

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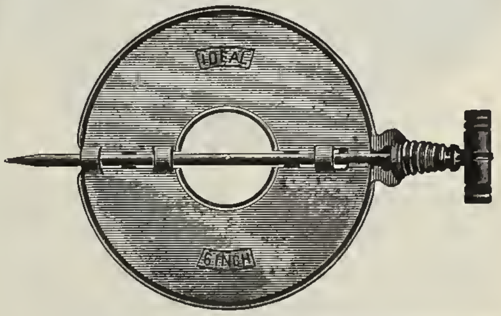

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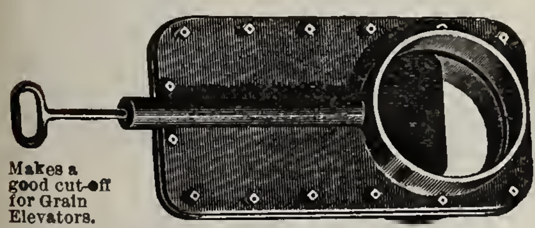

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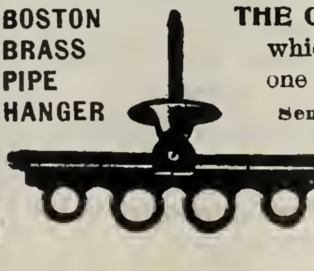

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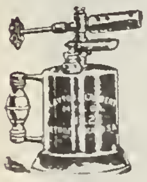

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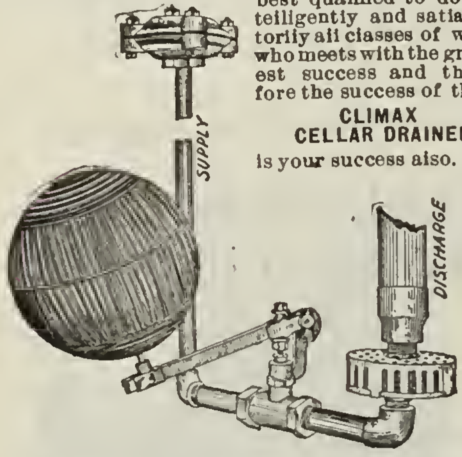

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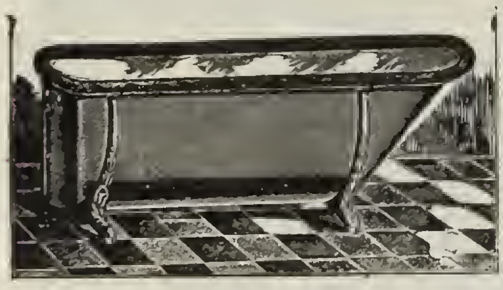

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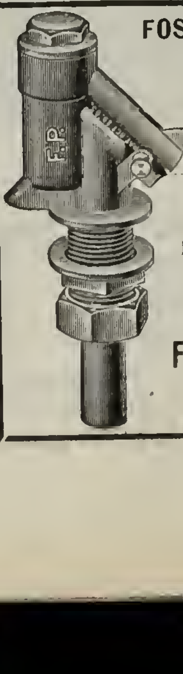

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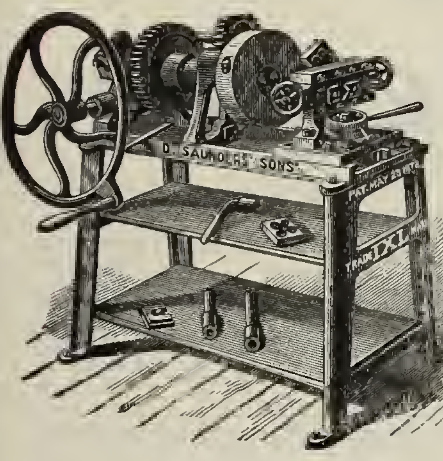
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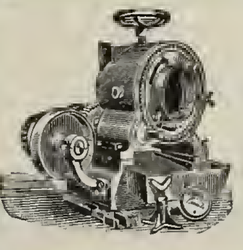

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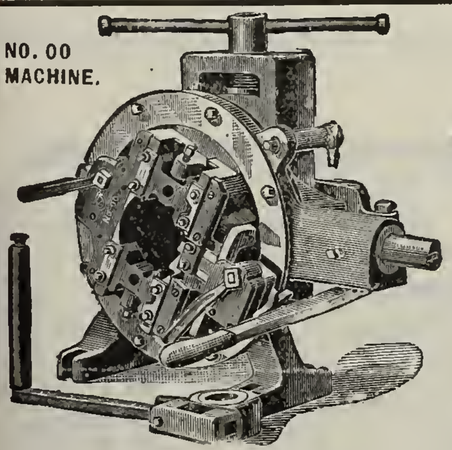

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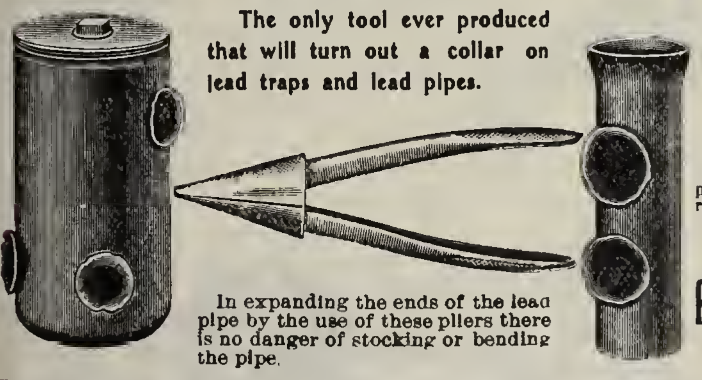

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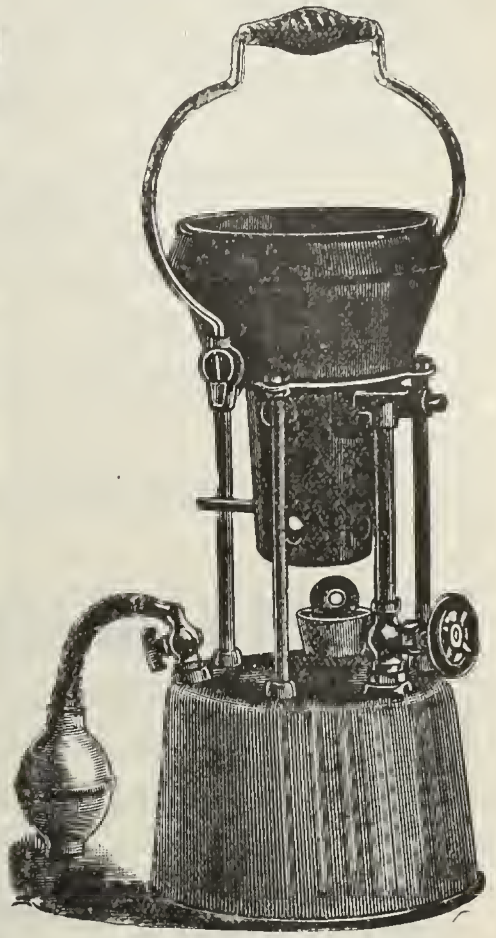

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The Anthracite Coal Dispute.

It will be a most unfortunate thing if the efforts to secure an amicable settlement of the differences in the anthracite coal mining industry prove unavailing and a strike occurs after all. Conferences which were held in New York early this week between representatives of the operators and the coal miners, under the auspices of the Arbitration Committee of the National Civic Federation, have apparently accomplished little or nothing. President Mitchell of the United Mine Workers, on his departure for Scranton, Pa., left the impression that the Executive Committee of the union were not likely to accept the terms offered them by the operators, while on the other hand the coal operators do not show any sign of willingness to offer concessions. In some well informed quarters an early strike of the coal miners is regarded as almost inevitable unless something entirely unforeseen should intervene. The question at issue appears to hinge mainly upon the degree of actual control of operations at the coal mines to be exercised by the unions and by the employers. Both sides having declared that they can go no further in the way of concessions, there is, apparanetly, but slight ground for mutual agreement. Nevertheless it is to be hoped that the matter may yet be submitted to adjustment by arbitration. Meantime it is gratifying to note that the negotiations have been carried on with an unusual degree of moderation and good temper on both sides, a fact which should tend to make an ultimate understanding the more practicable. It is said that a strike in the anthracite region of Pennsylvania would cause some 147,000 mine workers of all classes to be idle if they obeyed the order of the union, and collieries to the number of 357, with an annual output of about 55,000,000 tons, would be shut down. What the stoppage of so vast an industry would mean to those employed in and dependent upon it, as well as to the public at large, whose comfort rests so largely upon the product of that industry, can scarcely be estimated.

The Texas Oil Wells.

It was announced by some of the Eastern papers early in the week that the palmy days of the great Spindle Top gushers of the Beaumont oil fields in Texas had passed, these gushers, after more than a year of great activity, being said to have suddenly ceased gushing. The plausible explanation accompanied this report that the cessation of activity was caused by some great natural disturbance of the earth, which resulted in a relaxation of the pressure that caused the wells to spout, and as the alleged stoppage occurred immediately after the recent earthquake in Central America, that the earthquake was the cause of it. This report was closely followed by a denial of its accuracy. It is asserted that the oil wells on Spindle Top have not ceased gushing. The reports in the papers that the wells had stopped flowing were probably founded on the fact that the natural gas pressure of that region has greatly lessened, and the subsiding of some of the gas wells probably led to the report of the general lessening of pressure at both the gas and the oil spouters. Since the famous Lucas gusher was struck on Spindle Top, over a year ago, some five hundred other spouting wells have been started, all of which have been active gushers. So far no diminution in force or in the supply of oil is indicated. Should it occur, however, that the oil pressure should become reduced so that the wells will no longer gush—a development which is expected in the course of time—this need not be regarded as at all inimical to the prosperity of the Beaumont oil fields. Oil is known to exist in great abundance below the surface, and should spouting cease, the only change that will be required will be to pump the oil up by mechanical means, instead of relying upon the forces of nature. The Texas oil fields are likely to yield wealth for many years to come. The shipments of oil from Beaumont during the month of April aggregated no less than 5000 cars. This is the largest total for any month in the history of the industry. With the increased facilities for handling the oil, it is expected that the shipments from the fields will show further increase each month hereafter.

The Value of Licenses.

Ever since the authorities of many States and cities have provided that the plumber must demonstrate his competency before he can secure a license to engage in the plumbing business plumbers who have complied with the requirements of the law have been impressed with the idea that the same authorities should see that they are protected from competition with men who have no licenses, and who, in consequence, are violating the law. The correctness of this contention has not been questioned, but for their own protection it has been found necessary by the plumbers in many instances to themselves bring the violators of the law to justice. In a number of cities the plumbers support a man whose business it is to look after such violations and bring them to the attention of the magistrates and courts. The laws of many States are clear on this point, as well as the local regulations of cities prepared in accordance with the provisions of the laws. It is not, however, just that the plumbers should be expected to bear the burden of enforcing the laws, particularly as the violations are mostly on the part of men who shirk the examinations or have not the competency to pass them. In consequence much of their work, even though it be merely the repairing of old plumbing systems, is improperly done, and often so as to leave the plumbing in an unsafe sanitary condition. Such workmen are a menace to the general public, and the health boards, which have a large measure of influence in the preparation of the plumbing regulations, should give more attention not only to preventing the infringement of the sanitary laws, but also to the protection of the rights of those who have complied with the legal requirements.

Street Heating Systems.

A field of effort which is now attracting the attention of capital and engineers is the laying of mains in the streets for the heating of buildings. The authorities of many cities and good sized towns all over the country are being petitioned to grant permits to use the streets for laying these mains. The promoters of these enterprises expect to derive a return for their outlay by furnishing heat, by means of steam or water or other mediums, to customers on the streets along which their heating mains are run. In a majority of instances franchises of this character are sought by those who are building electric lighting plants, for the purpose of utilizing the exhaust steam after it has passed through the engines used for the generation of electricity. The petitions, however, are by no means confined to electric lighting companies. Many come from manufacturing plants which have heretofore allowed their exhaust steam to go to waste, but are now desirous of utilizing their exhaust steam through the street mains for heating. It is already noticed that where such methods of heating have come into use there has been a transfer of activity from the stove department of the smaller tradesmen to their steam and hot water heating department. Where heretofore the tinsmith has been engaged in making and fitting stove pipes, furnace jackets, furnace pipes and fittings, and other kindred sheet metal work, it is found that less work is being brought to his hand, while his fellow workman, the steam fitter, is more actively engaged in running pipes and setting radiators in the houses and buildings of customers. Meanwhile the salesman is none the less busily occupied in showing catlogues and samples of different styles of radiators, where heretofore samples of stoves and furnaces were explained to his customers. From the large number of lighting and heating companies that are being incorporated and are seeking franchises it would seem that, although the smaller tradesman will lose no business, he must be prepared to adapt himself to the demands that his customers are likely to make upon him, and to this end should give more attention to the designing and installation of steam and hot water heating systems.

Causes of Business Success.

In a recent report to his Government, Mr. Wyndham, the British Consul at Chicago, offers, for the benefit of his countrymen, some plain suggestions regarding American business methods as he has observed them in that great industrial and commercial center. They are evidently based upon a careful study of the conditions by a trained and intelligent observer and are worthy of note as embodying the results of an investigation by a qualified outsider of the reasons for the extraordinary commercial success of this country. This success the Consul attributes, in part, to "the education which teaches the boy independence and knowledge of his future responsibilities, and does not set the professions above business as a means of gaining a living." Another cause of success, he asserts, is the keeping of the money which has been made in the business and the brains which have made the business in it as long as possible, and the great thought which is devoted to arrangements whereby, after the death of the builder of the business, it shall not fall into the hands of his heirs, unless they are practically fitted to take care of it.

Another, and probably the chief, cause the Consul finds in the reward of merit. "The percentage of men fitted for the highest posts in business," he says, "is very small compared with the total numbers employed; and the heads of the big businesses, bank corporations and wholesale firms are always looking out for men, not only among those already in their employ, but also outside, capable of filling some post under them. To these men, when found, large salaries are given, which are drawn by them as long as they show that they are capable of earning them. Men employed in business houses of all descriptions are encouraged to discover new methods of carrying on the business which may in any way lessen the cost of production or carrying on of business, and specialization is carried on to an extreme point." He cites, in illustration, one case that has come under his notice, where the manager of a factory in six months doubled the output at an increase of 5 per cent. in the expense by rearranging the machinery. It is the pursuance of this policy, the adoption of the latest and best machinery and the familiarity of the workmen with its use, together with the excellent system of shop management, which combine to secure the conspicuous success of the American manufacturer.

Many visitors from the United Kingdom blame the English workmen because the same results are not obtained from similar machinery there as in the United States. "But," says Mr. Wyndham, "the more the factories are seen the more certain it becomes that it is the incentive to work and the energy of the managers, superintendents and foremen and the example set by them that has the wonderful effect on the output. This holds good in every kind of trade and business." These conclusions show the result of careful observation and certainly merit the attention of those for whose benefit they have been published.

U. S. Steel Corporation Statistics of Production.

At a meeting of the Board of Directors of the United States Steel Corporation this week, C. M. Schwab, the president, submitted statistics of the production of the constituent companies of the corporation for the first fiscal year, ended March 31, 1902. Among the products manufactured by the concern during the past year were: 6,961,534 tons of pig iron, 6,262,202 tons of Bessemer steel, 2,772,378 tons of open hearth steel, 415,299 tons of sheets, 404,746 tons of tin plate, 1,078.838 tons of wire and wire products, and 693,655 tons of tubes and pipes. The average number of employees in the service of the different companies constituting the Steel Corporation during the year was 158,263, to whom a total of $112,829,198 was paid in wages. The total pig iron production of the corporation in their first year was equal to 45 per cent. of the total production in the United States. The steel production was equal to 67 per cent. of the total production of steel in the United States.

The following is from the London *Ironmonger:* "Andrew Carnegie is said to have expressed a wish to have engraved upon his tomb the sentence: 'Here lies the body of a man who knew how to get around him men cleverer than himself.' In transmitting this from one side of the Atlantic to the other, the Associated Press of America omitted the small but, in this connection, all-important word 'him,' and so contrived to mangle the millionaire's meaning and subvert the sentiment entirely."

According to a statement issued by the Treasury Department the total amount of money in circulation in the United States on May 1 was $2,552,862,141, being a net increase of $59,337,491, as compared with the same date last year. This gives a per capita circulation of $28.66 based on an estimated population of 78,890,000.

THE NATIONAL ASSOCIATION OF STOVE MANUFACTURERS.

Those who remember the conditions which prevailed in the stove trade previous to the organization of the National Association of Stove Manufacturers have a keen appreciation of the good that has been derived from it and are most loyal in its support to-day. One of the results of its labors which is used with benefit by practically all the stove manufacturers in the United States is the system of computing cost, which was devised and presented largely as the result of the labor of the late John S. Perry. Previously stove manufacturers had arrived at the cost of their products by various methods, so that careful business men reached conclusions as to the cost of a stove of the same type that were so greatly at variance as to lead to sales which had a demoralizing effect on the whole stove trade. This was largely removed through the introduction of the cost computing system. During the administration of the late D. M. Thomas the cost system was modernized and perfected, so that its benefits are such as to lead to almost universal use among the stove manufacturers. This is one of the substantial things which the association has effected, and its importance cannot be overestimated.

Almost equally important was the annual gathering of men from widely separated districts, which afforded opportunity for an interchange of opinions and ideas, and eventually was influential in the organization of the local associations that have been efficient in the elimination of many evils from which the trade had previously suffered. The stove manufacturers in both their national and local associations have been satisfied to work up their cast iron into stoves, rather than to attempt the formation of cast iron rules by which the trade should be conducted. The association, notwithstanding, has had the effect of harmonizing prices and customs prevailing in different districts and on similar goods in probably as efficient a manner as if more positive methods had been attempted. The association has also had the effect of giving a healthy tone to the general market and of preventing to a large extent the invasion of different territories by outside manufacturers for the purpose of working off surplus product at prices that would be demoralizing.

There are those who have no hesitation in expressing their dissatisfaction with what the association has accomplished, but it is only necessary for these men to answer their criticisms by a reflection as to what would prevail in the stove trade if the influence of the National Association and the local bodies was withdrawn. The stove trade, both wholesale and retail, has benefited through this body of far seeing business men who are soon to gather at New York City.

The convention at Boston last year devoted some time to the discussion of the consolidation idea, and there can be no doubt that many members of the association secured information of great value when the captains of this branch of industry discussed the details that must necessarily be considered, perfected and observed in so great an enterprise as the consolidation of the stove manufacturers would be if effected. It is possibly due to the hope of securing further information along the same lines that there are indications at present that the attendance at the convention in New York next week will be so large as to break all previous records. A number of delegates throughout the Northwest have given assurance that they will be present, and from Chicago alone there will be 20 delegates. A special train will leave Chicago over the Lake Shore on Sunday night, May 11. All who have the best interests of the stove trade at heart will join us in wishing the manufacturers a successful meeting.

The Stove Founders' National Defense Association is a kindred body which will have completed its meeting at the time the stove convention convenes, and while devoted to a special object, it bears so important a relation to the welfare of the stove trade that all will wish it equal success in its deliberation and enterprise.

Entertainment by the New York Manufacturers.

As has been previously intimated, the stove manufacturers of New York City had no intention of allowing the members of the National Association of Stove Manufacturers to hold a convention in their city without giving them evidence that the honor conferred upon them was appreciated and extending courtesies in keeping with the honor. In consequence, Thursday evening has been selected as the opportunity for the enjoyment of a social entertainment after the convention has closed and its deliberations have been satisfactorily concluded.

The committee to provide the entertainment is composed of Peter B. Acker, Eugene Munsell, George W. Robertson, Henry T. Richardson, R. S. Horn, A. L. Canfield, Edward Bowditch, F. L. Sheppard, and E. F. Hill. After deliberation and consultation with their *confrères* in the stove trade, the committee have decided upon an entertainment similar to that which was so thoroughly enjoyed at the convention held in New York two years ago, and on next Thursday evening, at the Waldorf-Astoria, those who have been brought together by the stove convention will have an opportunity to extend their acquaintance and cement the friendships established, while a programme of diversion is presented.

The Late E. W. Fiske.

We present herewith a portrait of the late Eben Winslow Fiske, secretary of the Smith & Anthony Company of Boston, Mass., whose lamented death on April 29, at the early age of 42 years, was referred to in our last issue. Mr. Fiske was a son of the Hon. Eben W. Fiske, one of the most prominent citizens of Waltham, who was Sheriff of Middlesex County at the time of his decease. E. W. Fiske, Jr., had been connected with the firm of Smith & Anthony during his entire business life. He had been unwell for some time previous to his death, which was caused by Bright's disease. Mr. Fiske was an Alderman of Waltham three times, being President of the Board during his last term and filling the office with marked ability and fidelity. He never held any other public office. He leaves a widow and one son.

THE LATE E. W. FISKE.

The International Heater Company, Utica, N. Y., are about to erect a new building of brick construction, 110 x 150 feet, having a gravel roof supported by 12 iron columns. It will be used for foundry purposes, and will increase the molding capacity of the plant 75 per cent. The building will be constructed so as to furnish the best lighting possible, the plans having been prepared by F. H. Gouge with this idea in view. Scott & Yeomans have the contract, and it is expected that the building will be completed by July 1.

THE STOVE SALESMEN'S ASSOCIATION OF PENNSYLVANIA.

In the year 1896 three stove salesmen representing wholesale houses located on North Second street, Philadelphia, Pa., conceived the idea that it would be a good plan to form an association of stove salesmen, the chief object of which would be to promote sociability. Through the efforts of these three men a body was organized, known as the North Second Street Stove Salesmen's Association of Philadelphia, Pa., which proved to be of benefit to salesmen, inasmuch as it introduced a congenial, friendly and social feeling among competitive employees, thus assisting all of them to greater success in their vocation. Among the pleasant features of this organization were the annual banquets, generally held in the month of December. On these occasions salesmen representing competitive firms gathered around the festive board and, refraining from all "shop talk," would enter into the pleasure of such a convivial meeting as if it were some great family reunion.

The benefits of such an association were soon recognized by salesmen employed by firms located beyond Philadelphia limits, and as a number of them were desirous of becoming members, it was deemed advisable to accept all stove salesmen of good repute representing foundries and wholesale houses located in Pennsylvania. This took place in the year 1899, when the title of the organization was changed to the Stove Salesmen's Association of Pennsylvania, with headquarters at Philadelphia.

From the day those three traveling men promoted their idea until the present time there has been a steady increase in membership and a strong interest manifested, both by salesmen and employers. The association has received the indorsement of the leading foundries and wholesale houses in the stove business. The present year finds the association in a flourishing condition, and there seems to be even more enthusiasm among the members than heretofore. The officers and Committee on Ways and Means are putting forth a strenuous effect to secure all members possible in order that the number of stove salesmen at the next annual banquet will far exceed that of previous years. The association is now holding frequent meetings, and it has been decided to correspond with stove salesmen who are not members, but who represent foundries and wholesale houses in Pennsylvania, requesting them to join the organization.

An interesting feature connected with the stationery of the association is presented in the following cut, which was designed especially for the Stove Salesmen's Association of Pennsylvania by the secretary, W. T. Hallowell:

This illustration is very suggestive to every traveling man. All commercial tourists at some time during their experience on the road have traveled through territory in which towns were located at a distance from the railroad station. In such instances it has been the case that no conveyance could be obtained in which the traveler might ride to the inland town; hence there was no alternative except that he journey on foot with his grip in one hand and umbrella in the other. This illustration represents a stove salesman returning from an inland town with a good order, of course, secured from the best dealer there, and as he passes the first sign board on the outskirts of the town he consoles himself with the thought that he has 4 miles of terra firma to tread before reaching the depot. An experience like this is simply one of the minor hardships through which a traveling man must pass when on the road, and the purpose of the illustration on the stationery of the Stove Salesmen's Association of Pennsylvania is to show that a fellow feeling, as well as sociability, exists within the organization.

Under the present regulations of this body no benefits are paid in case of sickness, disability or death of a member, but if, in the course of time, a sufficient number of members should consider such a course advisable there would be a good field in which to institute a strong beneficial organization. The stove business is considered to be a legitimate vocation. Stoves are staple articles, and in this modern age are a necessity to mankind and rank next to food and raiment. Any person engaged in the sale of stoves follows a creditable profession, and it is fitting that men making such their life work should join themselves in an organization in order that they may become acquainted one with another, and while deriving a personal benefit from the social side may at the same time strengthen and uphold the high standard of the stove business. Any stove salesman representing a legitimate foundry or wholesale house may ascertain further particulars concerning the association by addressing the secretary, W. T. Hallowell, 111 North Second street, Philadelphia, Pa.

The Doyle Air Burner Company.

An effort is being made to locate the factory of the Doyle Air Burner Company, at Aurora, Ill. The company were recently incorporated under the laws of New Jersey with a capital stock of $2,000,000. The terms upon which the company are willing to locate at Aurora are the donation of a site of 20 acres and that citizens of Aurora subscribe to $100,000 worth of stock in the Doyle Air Burner Company, at par. A committee of three, consisting of D. W. Simpson, J. O. Mason and H. A. Uehren, have been appointed by the Merchants' Association of Aurora to canvass the matter thoroughly with a view to number the Doyle factory among the city's industries. It is believed by business men that little trouble will be experienced in securing the necessary subscriptions to the capital stock of the new enterprise as demanded by the Doyle Company. In fact, plans are being laid upon the assumption that the factory has already been secured and construction will be commenced in the very near future. The plant will consist of three buildings, a foundry, containing two cupolas, with a capacity of 25 tons of castings per day; a building in which to assemble the stoves, and a finishing shop.

It is believed by those interested in the enterprise that the introduction of the Doyle air burner will, to some extent, revolutionize the present method of heating buildings. The patent secured by F. J. Doyle, the inventor, has been investigated by a great many expert engineers, all of whom report very favorably. The letters patent are based upon the introduction of heated air at a point where it becomes thoroughly mixed with the gases as they arise from the consuming fuel and, igniting, cause a secondary combustion creating an intense heat. Under the old method of heating the gases were not ignited. Under the Doyle system it is evident then that there is a very large saving. The Doyle Company make the claim that, as compared with one of the best heaters on the market, it was found that for every 61 pounds of coal used by the furnace operated under the old method the Doyle stove required only 15 pounds 2 ounces to maintain the same temperature, a saving of a little over 75 per cent.

The officers of the company are: President, T. D. Hurley; vice-president, A. G. Thompson; secretary, Ed. E. McMorran; treasurer, John Cudahy; directors, T. D. Hurley, A. G. Thompson, E. E. McMorran, John Cudahy, F. J. Doyle, E. Humphrey, George W. B. Robins, T. J. Hudson, H. A. Frambach, J. H. Frambach and Jos. V. Clark. At present the Doyle stoves and furnaces are being manufactured at Chicago in a modest way.

The Arend Register Attachment.

The American Castings Company, Akron, Ohio, are placing on the market a new convex register equipped with the Arend attachment, for which patents are pending. In the ilustrations given herewith, Fig. 1 shows a broken sectional view of the register with the attachment ready to put into position, while Fig. 2 shows the register with the attachment placed in position. The attachment, which is illustrated in Fig. 3, is made of heavy tin and is so constructed that the instant the register is placed in position it adjusts itself automatically on one side to the hot air pipe, with stove pipe joint connection, and to the wood work or wall of the register on the other side, so as to hold the register in position securely and permanently, while at the same time absolutely preventing the escape of the hot air in the pipe otherwise than through the register opening. This attachment does away with the use of cement, screws or buttons to fasten the register, and also avoids the scorching and blistering of the paint or delicate decorations of the finished exposed wood work of the register box. It also saves considerable time in placing the register, all that is necessary being to have the hot air pipe extend from the box about ½ inch, this fitting into the register attachment similar to a stove pipe connection. Then the register is shoved into position and the job is instantly completed.

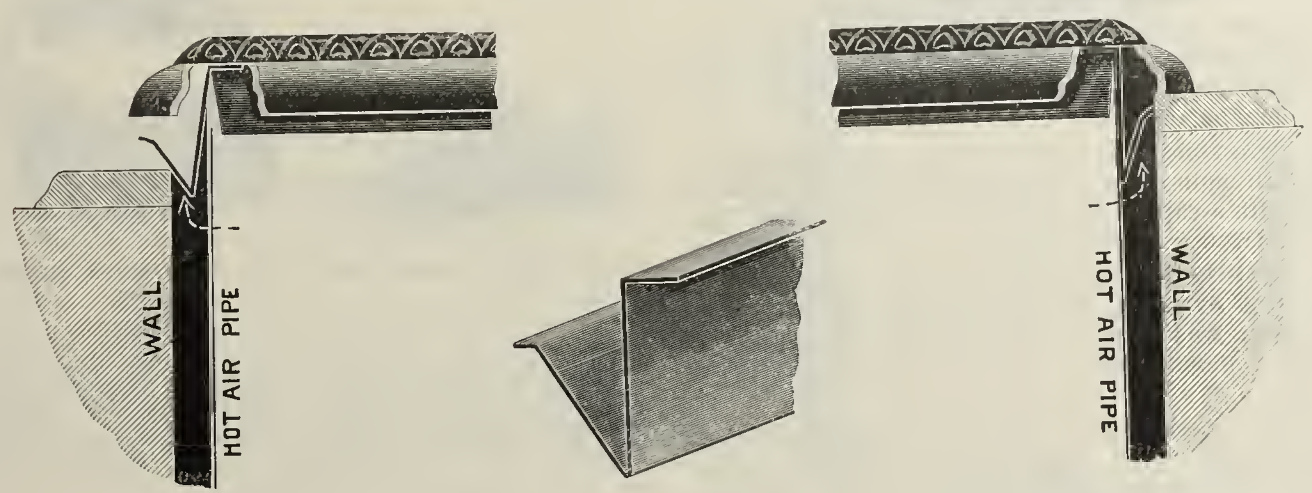


Fig. 1.—Broken View of Register, Showing Attachment.

Fig. 3.—Attachment.

Fig. 2.—Register in Position.

THE AREND REGISTER ATTACHMENT.

Welcome Furnaces.

A local paper of Syracuse, N. Y., states that the Syracuse Stove Works have secured the building formerly used by the Syracuse Wall Paper Company and will use it for the manufacture of a line of hot air furnaces, which they will call the Welcome. The building is 60 x 200 feet in dimensions and one story high. The company will remodel and adapt it to the production of hot air furnaces, installing all the modern facilities for producing them cheaply and to the best advantage. This building is adjacent to the present plant of the Syracuse Stove Works and is provided with both railroad and canal facilities for shipping. It is understood that the new plant will give employment to 50 additional molders, and that the company intend to be able to fill orders on the new Welcome line of hot air furnaces promptly when the fall season sets in.

The Keystone Stove Foundry.

Since the purchase of the patterns and the foundry of the Schuylkill Valley Stove Works, at Spring City, Pa., the plant has been running full and is able to fill all orders placed with it promptly. The new concern have had to refuse some large orders, owing to the present capacity being required for the regular trade and not being large enough to take care of the additional orders offered. The plant includes 7 acres of ground, and rumors are to the effect that material additions will be made to the present works to be able to meet the new demands made upon the concern. The new management have brought a great deal of enterprise to bear upon the business and have made some very important improvements and changes in the plant, its equipment and in the methods of operating which will soon place them in a more important position among the stove producing concerns of the country.

ODD PLATES.

The S. M. Howes Company, 40 to 46 Union street, Boston, Mass., are sending a circular to the trade calling attention to their exceptional facilities for handling Stove, Range and Furnace Repairs. A partial list is given of manufacturers for whose stoves, ranges and furnaces the company carry and are prepared to furnish Repairs at short notice. These include most of the best-known concerns in the trade. Attention is also called to the company's Boston Furnace Fittings and Boston Stove Pipe and Elbows.

The Fuller & Warren Company, Troy, N. Y., are sending to the trade their 12-page circular No. 17, printed on green paper with a green cover, devoted to the Ideal Stewart Range, which is of the French flat top type. This Range has been on the market a year, but this year appears with a reservoir that can be used on either the right or left hand, with 8 and 9 inch tops. Another feature is that two of these Ranges can be set as a twin for use in hotels or where a large cooking capacity is desired. The arrangement places two ovens in the center, with a fire box on each end, and gives an extra large high closet above. The company also make a little charcoal broiler for hotels where this Range is in use.

The Lawson Mfg. Company, Homestead, Pa., have been organized with a capital stock of $25,000, for the manufacture of Gas Stoves and Ranges, Burners, Water Heaters, &c. The company are equipping a three-story building at Homestead for the purposes of their business. The incorporators of the company are Lindsay S. Lawson, William H. Marley and William H. Johnson, all of Homestead.

The Mason Heater Company, Bellaire, Ohio, have purchased a building site, 171 x 520 feet, on which they will erect a foundry building 60 x 100 feet, also a three-story building 100 x 109 feet. This building will contain offices, salesroom and pattern room on the first floor. The second floor will be used for the manufacture of

Furnace Casings, Tin Pipes and other appliances. The shop will be fitted up with the latest improved machinery for the manufacture of heating goods. The third floor will be used for storage purposes. The plant is well located for shipping conveniences, having the Pennsylvania Railroad line on one side and the Baltimore & Ohio on the other. The company are already in possession of a number of orders and look forward to a good trade for their apparatus.

The Syracuse Heater Company, Syracuse, N. Y., are sending to the trade a green card printed in red and black, presenting a broken view showing the construction, fire travel, operation and large expanse of heating surface presented in the Twentieth Century Syracuse Heater, which they claim is one of the revelations of the age, and the only revertible flue base burner on the market. The card further states that a catalogue of the Heater will be mailed to those who desire it, on application.

The New Century Stove Company, recently organized at Moxham, W. Va., have secured a building which they will adapt for their purposes. They expect to have their plant in operation early in the summer.

The Glazier Stove Company, Chelsea, Mich., have just completed what is said to be one of the finest buildings in the State. It is three stories high and is built of dressed field stone with sandstone trimmings. In addition to the space for offices the building has storage accommodation for 40 carloads of Stoves. The company now have 200 men on their pay roll.

The Mound City Gas Stove Company, Wheeling, W. Va., are preparing plans for the erection of a large addition to their plant in order to meet the growing necessities of their business.

The Stamford Gas Stove Company of Stamford, Conn., with main office in New York City, have been organized with a capital of $60,000, by W. S. Horner, Warren Collins and I. F. Wardwell.

On May 1 the New York office of the Kelsey Heating Company of Syracuse, N. Y., in charge of Manager L. V. Sanford, was removed from 239 Water street to more commodious and convenient quarters at 156 Fifth avenue.

A pair of ice tongs in metal adorn a card which W. H. Colebrook & Sons Company, Syracuse, N. Y., are sending to the trade, calling attention to their Asbestos Furnace Cement and Stove Putty. As usual, the card bears an appropriate verselet in rhyme.

The Globe Steel Range Company, Kokomo, Ind., have started up their entire plant, the engine room, mounting room, pattern shop and fire proof pattern vault having been completely rebuilt. New equipment purchased includes a gas engine from Foos Gas Engine Company, Springfield, Ohio; large power gap shear from Toledo Tool & Machine Company, Toledo, Ohio; 250-light dynamo from Triumph Electric Company, Cincinnati, Ohio; line shafting, hangers, &c., from Ford & Donnelly, Kokomo, Ind.; pulleys from Reeves Pulley Company, Columbus, Ind., and belting, &c., from Charles A. Schleren & Co., Chicago.

The Gem City Stove Mfg. Company of Quincy, Ill., have recently registered the "Gem" and "Gem Heater" trade-marks.

The Abram Cox Stove Company have recently been making some improvements at their plant at Lansdale, Pa., with a view to increasing their facilities. The roof on the new addition has now been completed and workmen are busily engaged in enlarging the old building.

The proprietors of the Lizzie Lowman Stove Foundry, Sheffield, Ala., are about to further enlarge their plant. The company have been making good sized shipments of Stoves to California in the past week or two.

The Atlanta Stove Works, Atlanta, Ga., are operating very successfully in their new and enlarged plant. They have made several important improvements in their Stove patterns, and are producing a line of goods that are proving eminently satisfactory to their trade. The company have contracted for the output of the Alabama Mfg. Company of Birmingham, Ala., consisting of all kinds of Stove and Country Hollow Ware, English Pots, Kettles and kindred goods. With this adjunct to their business the Atlanta Stove Works expect to attract a larger custom than ever before.

Morris P. Borden, brother of F. M. Borden, the well-known Stove jobber of Philadelphia, died at his residence, 4836 Walton avenue, West Philadelphia, on Monday, May 12.

The Philadelphia Heater and Range Association of Philadelphia, Pa., will hold their annual meeting on Wednesday, May 14, at the Builders' Exchange in that city. The annual election of officers will be held and will be followed by a banquet. All dealers in Heaters and Ranges have been extended an invitation to be present.

Electrically Heated Devices.

United Electric Heating Company, 260 Randolph street, Detroit, Mich., have added to an extensive line of electrical apparatus suitable for the hardware trade several new articles, three of which are here illustrated. Fig. 1 represents a curling iron heater, features of which are its efficiency, cleanliness and freedom from fire and consequent danger. The heaters are particularly adapted to use in theater dressing rooms, hotels and other public places. Fig. 2 represents one of a very large assortment of laundry and pressing irons. They are especially efficient because practically all the heat generated is utilized, no heat being wasted in heating the atmosphere. The temperature can be regulated at will; the heat is sufficient and constant always, no time being lost in changing irons. The life of the irons is a term of years, all that is necessary in renewal even then being the replacing of the heating coil, which can be done at a slight cost. Fig. 3 represents an electrically heated chafing dish, which has the advantage over the ordinary chafing dish of entire absence of flame, fire, dirt and the odor of combustion, as well as being always ready for use by turning the switch, no matches or alcohol being required. The heater is removable, so that an alcohol lamp may be used where there is no electric current, and this heater may be attached to almost any chafing dish. Where this is done it is only necessary to adjust the legs so that the heater is held at the proper hight. The company have also adapted these heaters for use with hot water urns, and can supply urns fitted with the heaters, or they are prepared to supply heaters fitted to almost any urn. By the use of this electric heater it is possible by means of a switch to regulate the temperature and keep it constant at any point, giving the same results always under given conditions.

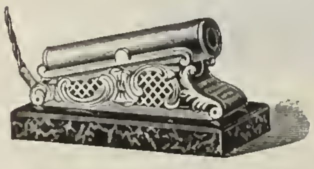


Fig. 1.—Electric Curling Iron Heater.

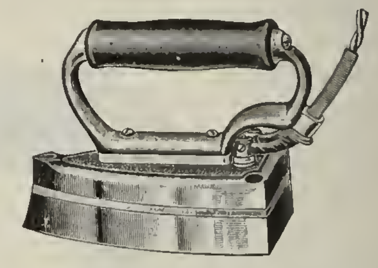


Fig. 2.—Electric Laundry Iron.

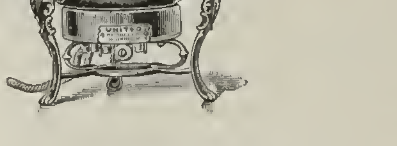


Fig. 3.—Electric Chafing Dish.

Brown Beauty Roaster.

Bronson-Walton Company, 1800 East Madison avenue, Cleveland, Ohio, for whom John H. Graham & Co., 113 Chambers street, New York, are direct representatives, are just putting on the market the Brown Beauty roast pan, here illustrated. These pans are made in the following sizes: 9 x 14, 10 x 12, 10 x 15, 11 x 16 and 12 x 17 inches regularly, it being the intention later to make larger sizes. The two wires seen on the bottom raise the pan so that its contents do not come in direct contact with the bottom of the oven, thus preventing any tendency to burn or scorch. The indentations in the top of the pan, seen in Fig. 2, cause the condensed steam to drip evenly over the roast, thus making the pan self basting, instead of running to one side if the oven is uneven. In the front is a ventilator, easily opened or closed. The handles are strong and have no sharp edges. The arrangement of the handles is such that they are stopped in a horizontal position, thus often preventing the burning of fingers when the pan is hot. The upper pan fits inside the edge of the lower pan and keeps the juices in the roaster. The pan is made of smooth steel, strongly wired, shellaced, and packed in heavy hardware paper in lots of six each, sealed at the end, so that they reach the retailer in clean and good order.

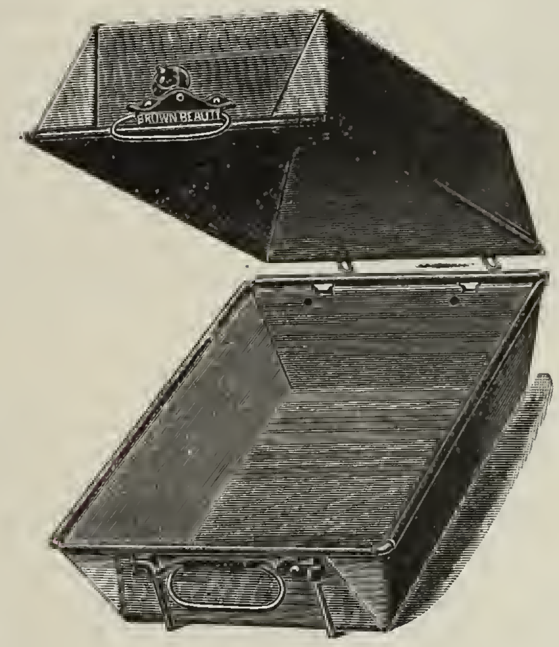


Fig. 1.—Brown Beauty Roaster, Open.

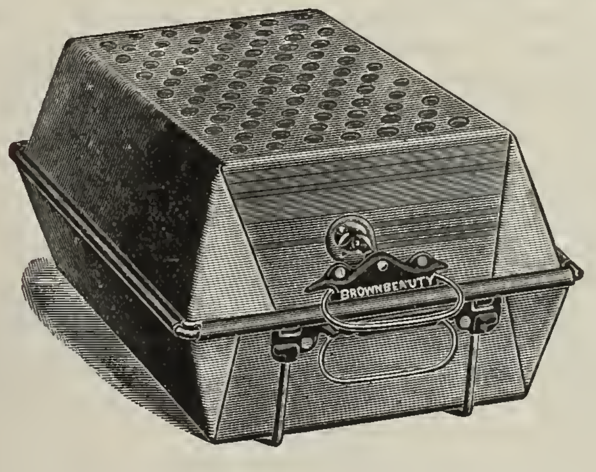
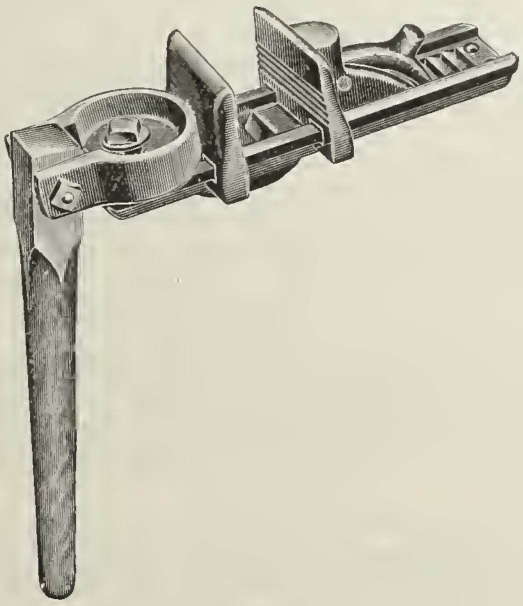


Fig. 2.—Roaster Closed, Showing Self Basting Device.

The H. E. Hessler Company of Syracuse, N. Y., have just purchased a large building on Hickory street, close to their present stores and warehouse, with a view to providing additional facilities for their business. The building is a four-story brick structure, covering an area 50 x 100 feet. An elevator is being installed and necessary alterations are being made for the proper equipment of the building so as to receive the heavy goods which are embraced in the tin shop supply department of their business.

Lightning Vise.

The Neverslip Tin Cover Company, Watertown, N. Y., have recently put on the market the Lightning vise, here illustrated. This vise can be quickly adjusted to clamp work in either a vertical or horizontal position, as circumstances may require. It is secured to a bench or other support in such a manner that the opening in the vise will align with an opening in the bench to which it is secured, so that a board or other object can be passed through the opening and clamped between the jaws. When clamping work horizontally the material can be placed between the jaws and the cam will force tightly against the object. By an adjustment of the bolt in the turntable the lever can be made to operate by moving either to the left or right, as occasion suggests. This device will firmly clamp objects with parallel or wedge shaped sides, the jaws being corrugated, which makes it especially desirable for use as a pipe wrench. There is also an opening in the base of the vise between the jaws which permits the passage of pipe or rod in a vertical position. The vise works rapidly and the rear jaw is quickly adjusted to any required position by lifting a dog which operates in notches at the back provided for that purpose. These vises are made regularly in three sizes—No. 1, weighing 4½ pounds; No. 2, 7 pounds, and No. 3, 11 pounds. They can also be made any size to accommodate different sizes of pipe, wood work or other articles to be held in this way.



Lightning Vise.

Stove and Hardware Dealers.

Western Wind Mill & Hardware Company, wholesale and retail dealers in Wind Mills, Hardware and Water Supply Material, have purchased the Hardware and Wind Mill business of Burton-Lingo Company, Midland and Big Springs, Texas, and of Johnson & Collins, Colorado, Texas, and will continue the business at all three points. The company have a paid up capital of $60,000.

P. W. Ziegler has succeeded Ziegler & Doran in the Hardware, Stove and Sporting Goods business in Manhattan, Kan.

The Columbian Enameling & Stamping Company, Terre Haute, Ind., are now regularly turning out their product of Enameled Steel Ware, which is claimed to have proved, on test, to be satisfactory in every way. While the company are not yet in position to fill all orders, as it takes time to educate their workmen in the manufacture of this line of goods, they expect shortly to be ready to supply the needs of the trade.

The American Household Hardware Mfg. Company were recently incorporated at Jamesburg, N. J., with a capital of $100,000. The incorporators are: Charles Holland, E. W. Rose and Franklin Mortimer. This company will build a plant for the manufacture of Household Goods in the Hardware line.

The Michigan Steel Boat Company, Detroit, Mich., are sending to the trade catalogues devoted to their patent Steel Boats, made for pleasure and hunting, and some of sufficient size to be propelled by means of motors. The Boats are made in a variety of styles, one being arranged to fold for use as a trunk and especially adapted to the requirements of hunters. It can also be used as a large packing case for conveying baggage to the camp.

F. D. Copsey has sold his Hardware and Stove business in York, Neb., to C. A. Schrandt.

Samuel K. Painter has sold his Hardware, Stove and Tin business in Lindsay, Neb., to C. J. Steiner.

Stein Bros. have succeeded O. E. Champe in the Hardware, Tinware and Sporting Goods business in Hastings, Neb. The new proprietors have remodeled the entire building, and now have three floors, each 44 x 130 feet, and one floor 44 x 50 feet.

E. D. Sargent, for several years past the Eastern representative of the White Mountain Freezer Company, has resigned his position with that company and will hereafter be associated with the Alaska Freezer Company, Winchendon, Mass., a new corporation chartered under the laws of New Hampshire for the manufacture of Ice Cream Freezers. It is understood that Mr. Sargent will be made treasurer of the new company.

The Peck, Stow & Wilcox Company, manufacturers of Tools, Machines and General Hardware, are said to have bought the entire plant of the Brittan & Mathes Company, Pittsburgh, Pa., manufacturers of Builders' Hardware and kindred lines of goods. It is believed to be the intention to transfer the business and plant in Pittsburgh to the company's Cleveland establishment about July 1.

The store of Whipple & Robinson, Glens Falls, N. Y., has been gutted by fire, and the firm will be pleased to receive catalogues and price-lists. Their line comprises Hardware, Stoves, Plumbing, Roofing, &c.

W. S. Shinn, who has opened a retail Hardware and Stove store at Eddyville, Iowa, informs us that he will be glad to receive catalogues and price-lists from manufacturers of goods in his line.

Trade Instruction at the Hampton Institute.

The thirty-fourth annual report of the Hampton Normal and Agricultural Institute of Hampton, Va., just published, shows that a highly successful educational work for colored youth is being carried on in that now famous institution. During the past winter term 1079 young men and women received instruction along various industrial lines at Hampton, while the Southern industrial classes in Norfolk and vicinity, which are under the care of the Hampton Institute's directors, had an enrollment of 1976, and the Huntington classes at Newport News and vicinity had an attendance of 807, which, with 347 attending last summer's Institute classes, make a total of 4209 pupils who were under the school's care in the past year. The importance of this effort for the elevation of the young colored citizens of the South and their education to the point of making them self supporting and self respecting members of the community can scarcely be overestimated.

Among the numerous departments into which the work of the Institute is divided, perhaps none is more important than the trade school, in which 168 male students were enrolled in the past season. A number of the boys, after spending a year in productive industry, working all day and attending school in the evening in order to obtain a sufficient credit balance to help carry them through the succeeding years of their course, take the next three years in the trade school, working in the shops during the day and giving the evening to academic work. These youths are given a comprehensive course of instruction in one or more trades. At present courses are provided in carpentry, wheelwrighting, harness making, bricklaying, blacksmithing, wood turning, tailoring, shoemaking, printing and bookbinding, the technical as well as the practical side of each trade being instilled into the pupils. Much of the product of the pupils is sold and thus furnishes a source of income to the Institute. All the pupils of the trade school receive instruction in mechanical or free hand drawing, in physics and in the ordinary English branches. It is intended this year to enlarge the trade school building and add a foundry to the facilities. In view of the increasing demand for skilled workmen in the South, such an institution as the Hampton Institute Trade School must be of immense value, not only in providing competent workmen, but also men who are qualified to teach trades to others.

Our Foreign Trade.

The United States maintains its position at the head of the world's exporting nations, despite the temporary reduction in the value of exports due to the shortage in corn available for exportation. The export figures for the nine months ending with March 31, 1902, as shown by the report of the Treasury Bureau of Statistics, indicate a drop of $58,681,957 in the total value of exports. When it is considered, however, that the value of corn exported fell, owing to the shortage in the corn supply, $52,000,000 below that for the corresponding period of last year, and that cotton, owing solely to a decrease in price, fell $12,000,000 below the exports of the same period of last year, the entire decrease is more than accounted for. Corn exports fell from 146,000,000 bushels in the nine months of the fiscal year 1901 to 24,000,000 bushels in the nine months of 1902. Cotton exports increased 344,000,000 pounds, but owing to reduced prices fell $12,000,000 in the total value exported. These two items—due in the case of corn to the shortage at home caused by the drought of last year, and in cotton to the reduced prices in the markets of the world—more than account for the reduction of $59,000,000 in the total exports.

Notwithstanding the reduction of $59,000,000 in exports, however, the grand total of domestic exports from the United States exceeds that of any other country. The figures of domestic exports for the nine months ending with March are: From the United States, $1,062,432,158, and from the United Kingdom, the next largest importer, $1,019,466,437. The latest available statistics show that the average monthly exportation of domestic merchandise from the United States exceeds that of any other nation, that the United Kingdom stands second, Germany third, France fourth, Netherlands fifth and British India sixth in the list of exporting nations. On the other hand the list of importing nations shows that the United Kingdom stands first, Germany second, France third, the United States fourth, Netherlands fifth and Belgium sixth in the relative demands upon the markets of the world.

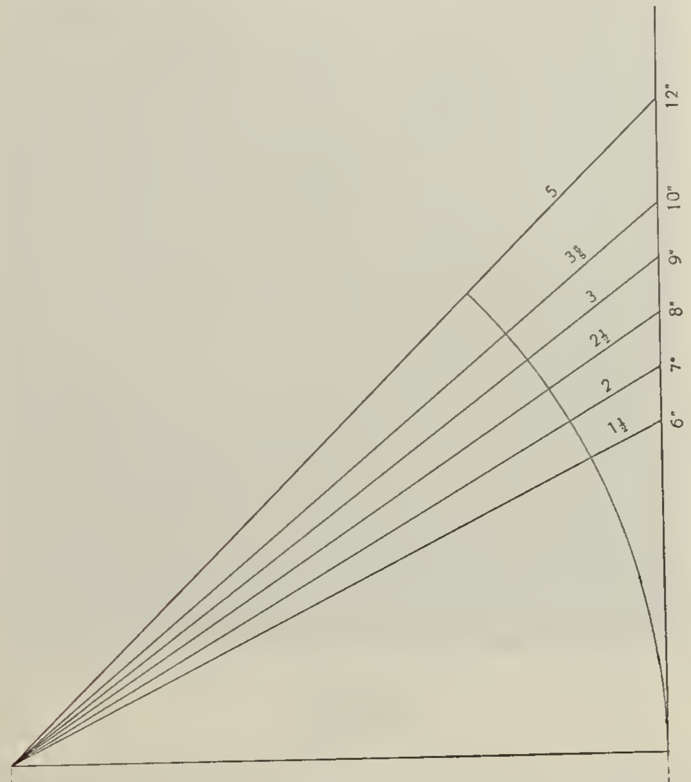
One especially marked characteristic of the commerce of the United States, in comparison with that of other countries, is its large excess of exports over imports. Of the 30 countries whose average monthly imports and exports are shown by the Bureau of Statistics only 11 show an excess of exports over imports. These 11 countries are Argentina, Brazil, Bulgaria, Canada, Chile, Egypt, British India, Mexico, Russia, Uruguay and the United States. The average monthly excess of exports over imports in the case of India amounts to about $9,000,000, and Russia also about $9,000,000, while that of the entire list of countries which show an excess of exports over imports (exclusive of the United States) amounts to but $38,000,000 per month, while from the United States alone the excess of exports over imports is as much as $42,637,127 per month.

John H. Cassidy, a well-known New York manufacturer and dealer in Gas Fixtures, died on Saturday, May 3, at his home in West Orange, N. J., aged 82 years. He was one of the oldest members of the trade in his line.

CALCULATING NUMBER OF SQUARES IN A ROOF.

BY I. N. PHILLIPS.

The following method of calculating the number of squares in a roof is submitted for the information of the readers of *The Metal Worker*, in the belief that it will be found to possess some advantages over the method of getting the length of the rafter and multiplying by the middle length of each section, in that it saves time occupied in poring over drawings when there may be others waiting for them. It also reduces the chances of making mistakes, where two or three are using the drawings at the same time. As a general thing, in residences having steep or Queen Anne roofs, the pitch is uniform, except on towers, and varies from 6 inches in 12 inches for quarter pitch, to 12 inches in 12 inches for half pitch. A favorite pitch in this section is 10 inches in 12 inches. Instead of measuring each section of roof plan separately and adding them up, an easier method is to measure the roof plan flat, as if it were to be covered like a floor.



Calculating Number of Squares in a Roof.—Diagram.—Scale, 3 Inches to a Foot.

Say that this amounts to 3000 square feet. Have at hand a diagram, like the accompanying sketch, which shows different pitched roofs, from 6 in 12 to 12 in 12. Divide the 3000 by 12, the length of the flat line, and multiply the quotient by 5, add the result to the 3000. The calculation will be as follows:

12 | 3,000 | 250
24 5
60 1,250
60 3,000
0 4,250 square feet in roof.

The correctness of this method can be proved by assuming a plain roof, 40 x 75 feet in the plan, which is 3000 square feet flat. With a roof 12 x 12 inches pitch, with ridge through the middle, the rafter is 56.7 feet over from eave to eave, as near as can be measured with a rule, which, multiplied by 75, gives 4252.5 square feet.

My method is correct, so long as the pitch is uniform. It is also quite simple. The multiplier 5 is what is left after the 12 inches is taken from the pitch line. If the pitch were 9 inches in 12 inches, the multiplier would be 3, as shown. Now, while the multiplier 3 is absolutely correct, 5 is a fraction too large, which can be demonstrated by the well known principle in geometry—viz., the square of the base added to the square of the perpendicular equals the square of the hypothenuse. But that is as near as can be measured on an ordinary rule, and it does not affect the correctness of the method. I mention this for the fellow who can see a fly on a church spire 1 mile off. If he wants to be excruciatingly exact, he can extract the square root of his multiplier, but the average Rosinhead knows very little about square root—and cares less.

The Amalgamated Sheet and Tin Plate Scales.

At the convention of the Amalgamated Association in Wheeling, W. Va., last week, the recommendations of the Wage Committee that the basis of scales as signed by the committee representing the Amalgamated Association, the Republic Iron & Steel Company, the American Sheet Steel Company and the American Tin Plate Company, were adopted. The following changes in the foot notes to the sheet and tin plate scales were suggested:

Memoranda of agreement:

The second clause in the memoranda of agreement was amended by striking out the figures "160" in the second line and inserting "130" instead.

New clause desired for memorandum of agreement:

"5. Finishing mills will be allowed to work three turns when practicable. On finishing mills working or desiring to work three turns, eight hours shall constitute a day's work. Rolling shall not start earlier than 5 a.m. Monday morning, and first furnace shall cease charging at 11.30 a.m. on Saturday. The last furnace shall not charge later than one hour after the first furnace and close the week's work. On all mills working three turns a third roller shall be employed."

SHEET MILL SCALE.

Substitute for foot note 4: "All sheet iron or sheet steel shall be weighed by the company after being sheared and opened, and the company shall furnish the complete weight of each turn to the roller, or put the same in a convenient place."

SHEET MILL HANDS' SCALE.

Add to foot note 11, these words: "This to apply only to sheets 60 inches long and shorter lengths."

ROUGHING AND CATCHING ON SHEET AND JOBBING MILLS.

The above change to be incorporated in the roughers' and catchers' scale.

TIN MILL SCALE.

"1. That the screw boys do not bundle any scrap ends, scrap to be bundled by the company."

"2. That all tin mills be paid at least every two weeks."

"3. That as a counter proposition to the three years' scale we propose to agree on conditions that we get the Cleveland 1900-01 scale and foot notes, with the same conditions as then prevailed, where now practicable."

"4. And when in the judgment of the manager and the mill committee the work is too heavy for the catcher, extra help shall be furnished."

"5. That when dirty bars are supplied for tin mills the company shall furnish a man to sweep them, and that the crew shall not be held responsible for dirty iron. The crew shall be paid for production per mill for such iron put in by the company."

"6. That no more level hand jobs be given in tin mills, and level hand men be singled out as soon as a vacancy occurs."

"7. That 10 per cent. extra shall be paid for 40 gauge when doubled three times.

MOREWOOD STACKS.

That the Morewood scale shall end July 15.

SHEET AND TIN BAR SCALE.

New foot note:

"1. That the price paid for drag down on sheet bar mill be one-third the price of heater's price."

"2. That the drag down from furnace to rolls on sheet bar mill have a scale of about 14 cents per ton.

Conferences will be held at an early date between wage committees representing the Amalgamated Association and conference committees representing the Republic Iron & Steel Company, the American Tin Plate Company and the American Sheet Steel Company. However, no date has yet been set for these conferences.

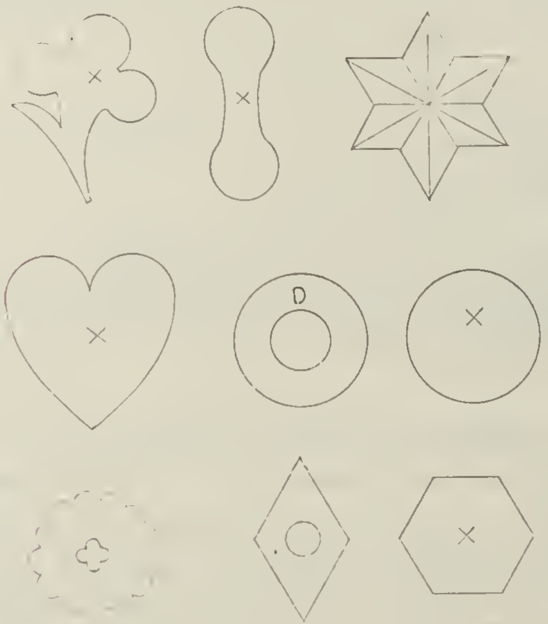
THE AMERICAN TIN PLATE COMPANY'S large plant at Monessen, Pa., is running full time in all departments. Two new mills from the dismantled plant at Johnstown, Pa., are being added to the equipment of the Monessen works. The new mills will probably be started early next week. It is said that the company are contemplating an increase in the capacity of this plant, adding a number of new Jumbo stacks.

Wreck at Shenango Tin Plate Works.

A cyclone which struck New Castle, Pa., on the afternoon of May 6 caused serious damage to the great Shenango works of the American Tin Plate Company, at that place, the largest plant of its kind in the world. Every stack above the 30 mills comprising the plant was broken off, many of them being whirled through the roof of the building; steam pipes were broken and torn away, and the roof was crushed in. The 2000 men employed at the plant were panic stricken by the darkness and blinding steam, but happily all managed to escape without serious injury. The wind which caused the wreck came from the southwest. It was preceded by a period of extreme sultriness, which greatly affected the men at work in the mills. Shortly after the cyclone arrived with a frightful rush, and the tin mill, which lay directly in its path, suffered the greatest injury, comparatively little damage being done elsewhere in the city. The damage to the works is estimated at about $100,000, and several weeks will be required to get the mills again in running order.

CAKE CUTTERS.

Bright pieces of scrap tin can be utilized to make lady finger, patty, biscuit, doughnut, cookey, cake, animal, tart and muffin cutters. These are easily made, prove attractive, and sell readily if an assortment of forms is kept on hand. In Fig. 1 is shown a variety of simple forms. To make the full sized drawings of these figures the method shown in Fig. 2 may be used. Divide the length of the smaller outline into an equal number of spaces, as shown by the small figures 1 to 8, and the hight into any number of equal parts, as shown from *a* to *g*. Through the small figures 1 to 8 and letter *a* to *g* draw lines at right angles to each other, intersecting each other, as shown, and crossing the outline of the figure.



Cake Cutters.—Fig. 1.—Simple Forms.

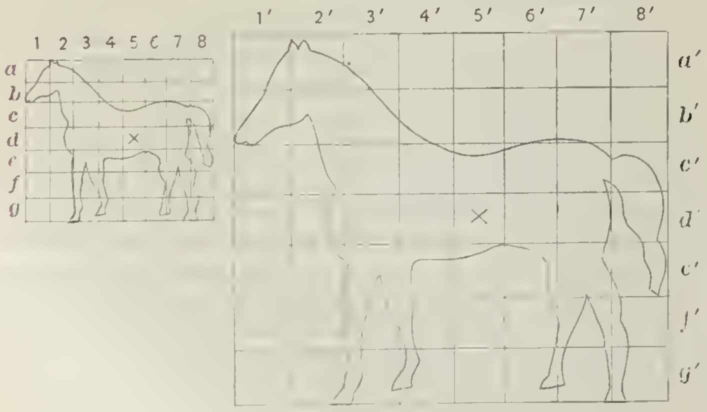


Fig. 2.—Method of Enlarging Figures.

Now assuming that the outline of the horse is to be made twice the size of the small diagram, then set off a distance equal to twice the amount of 1 to 8, as shown by 1′ to 8′, and twice the hight *a g*, as shown by *a′ g′*. As 1 to 8 is divided into eight parts, and *a g* into seven, then divide 1′ to 8′ into eight parts and *a′ g′* into seven, respectively. Through points 1′ to 8′ and *a′* to *g′* draw lines at right angles to each other, as shown. Now, following the smaller diagram as a guide, the large one is traced through corresponding squares. In this manner any figure can be enlarged to any size. If the outline was required six times as large as the small diagram then would the length 1 to 8 and hight *a g* be made six times as large, then divide the spaces thus obtained into the same number of divisions as in the original diagram. In Fig. 3 is shown an outline of a bird and barking dog. These or any other figures can be enlarged, using the above method.

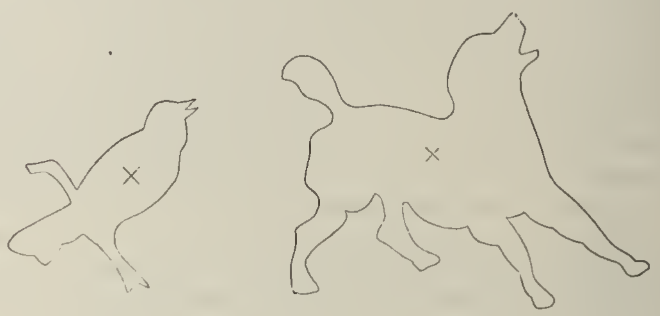


Fig. 3.—Bird and Dog.

The cutters are constructed as shown in Fig. 4, in which A represent a flat piece of tin of the required size, onto which strips of tin ⅜ inch wide, which have been formed to the outline of the figure desired, are tacked with solder at *a* and *a*. Then a handle, shown at C, about ½ inch wide, with a hem edge bent toward the inside, is soldered to the flat disk A at *b* and *b*. A ½-inch hole should be punched through the center of the disk, shown by the arrow point, also as is shown in all the diagrams by X in Figs. 1, 2 and 3, which allows the surplus dough to pass out at the top when cutting the various figures. D in Fig. 4 shows a perspective view of a doughnut cutter, showing how the handle and strips are put together, being the finished article of D in Fig. 1.

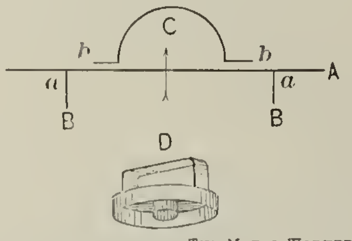


Fig. 4.—Construction of the Cutter.

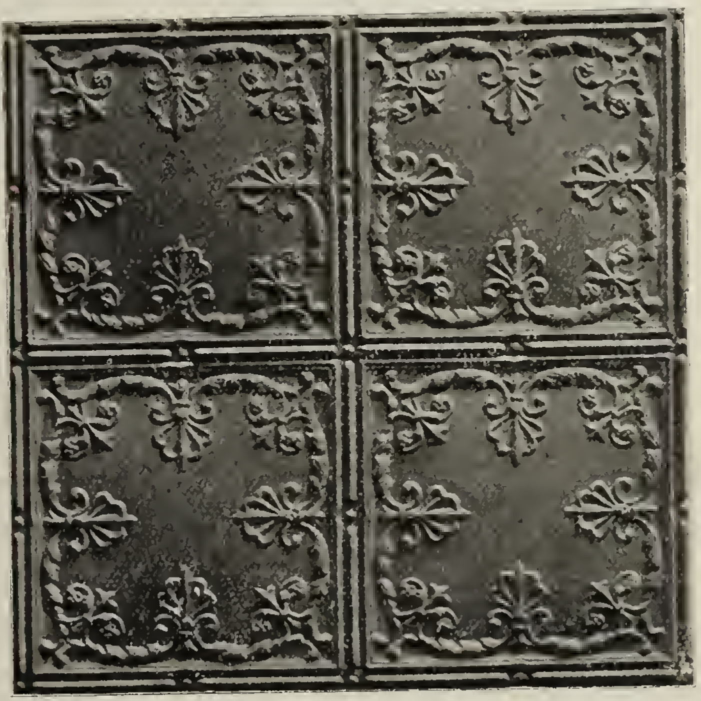
An Australian Visitor

F. Malley, a manufacturer of sheet iron, tin and zinc work, at Liverpool and Kent streets, Sydney, New South Wales, Australia, was a visitor at *The Metal Worker* office this week. Mr. Malley is spending a few weeks in the United States, having landed at San Francisco about a month ago. After visiting some of the Eastern centers he will return home by way of London. He is especially interested in the modern developments in the use of sheet metal, and is acquainting himself with American practice in this line. He would be pleased to receive at his home address the catalogues of manufacturers of metal ceilings and side walls and architectural sheet metal work of all kinds, also metal roofing and cornices. Mr. Malley regards Australia as a promising field for these materials.

A great deal of galvanized iron is used for construction work in Australia, a large proportion of the buildings in some districts being roofed with this material. Most of the galvanized iron now used in Australia comes from the United Kingdom, but under the new Australian tariff the prospects of opening up a market for the American product are more favorable. It would probably repay the manufacturers of the United States to give some attention to the Australian market. Efforts are now being made to start the manufacture of galvanized sheets in Australia, but very little headway has been made as yet in that direction, the work having hardly progressed beyond the experimental stage.

Sheet Metal for Interior Decoration.

The Canton Steel Roofing Company of Canton, Ohio, with New York agency at 157 West Twenty-third street, manufacture a fine line of stamped steel ceilings, side walls and interior decoration generally. Herewith are presented some designs in this line which they have recently gotten out. In Fig. 1 is shown a ceiling plate of Colonial pattern, simple but pleasing in effect. These plates are furnished in 24 x 48, 12 x 48, 24 x 24 and 12 x 24 inch sizes. A ventilating center, also of Colonial design, 24 x 24 inches in size, is given in Fig. 2, while Fig. 3 shows a handsome wainscot plate of Rococo design, 12 x 24 inches in size. These patterns are new and original, and admit of a high degree of ornamentation. The manufacturers point out that their plates are resheared on all sides after being stamped, and thus will line perfectly straight and regular, making it immaterial which way the plates are lapped.



Sheet Metal for Interior Decoration.—Fig. 1.—Ceiling Plate, Colonial Design.

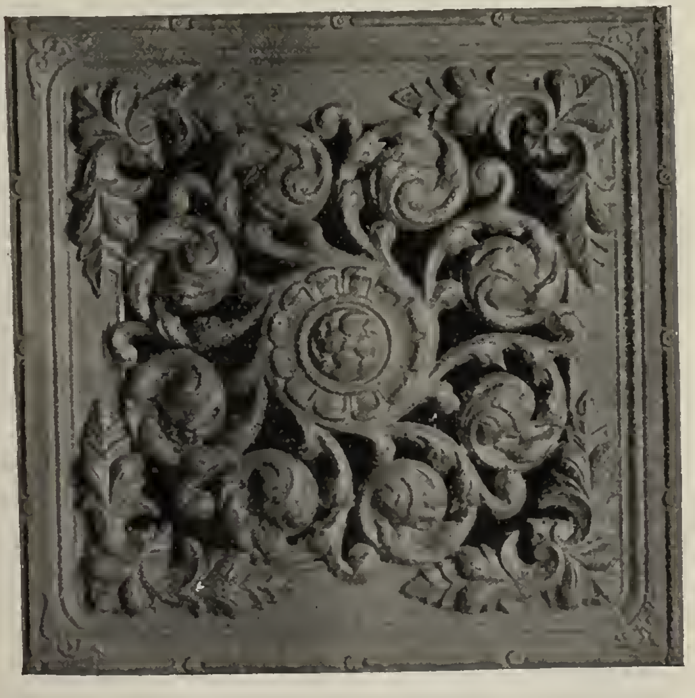


Fig. 2.—Ventilating Center, Colonial Design.

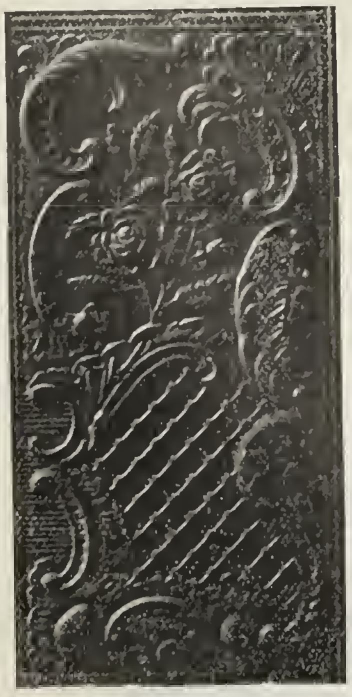


Fig. 3.—Wainscot Panel, Rococo Design.

Death of William H. Leitch.

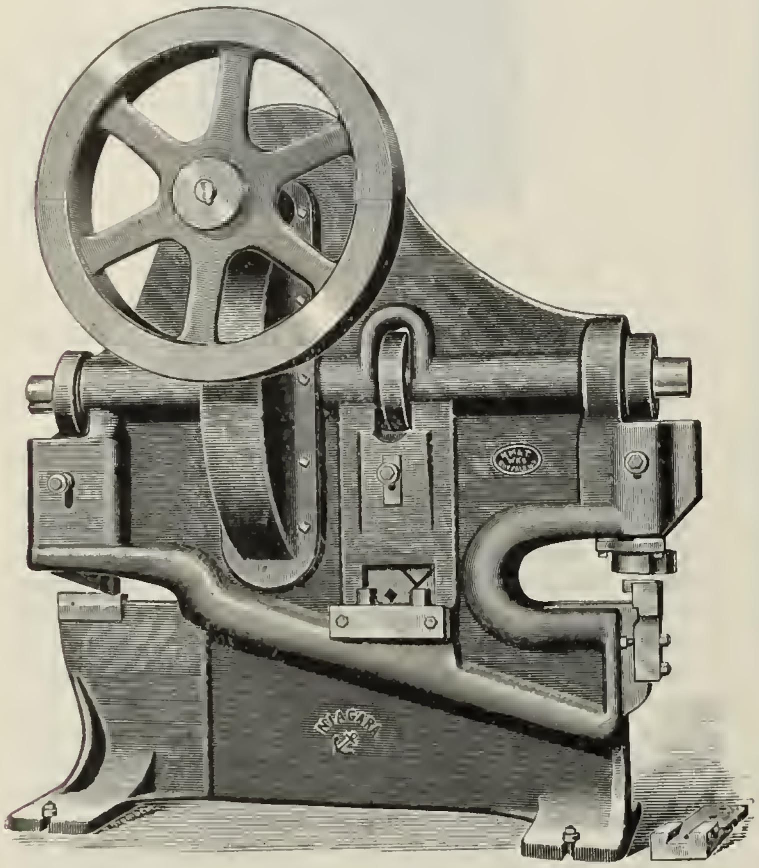
William Hardie Leitch, general manager of the Jersey City Galvanizing Works of Jersey City, N. J., died suddenly on Friday, May 2, at his home, 373 Madison street, Brooklyn, N. Y., as the result of heart failure induced by stomach trouble. Mr. Leitch was born at Allegheny City, Pa., 52 years ago, but had lived many years in Brooklyn, where he was well known in commercial circles. He had been connected with the Jersey City Galvanizing Works for a long period, and had been treasurer of the New York Manufacturers' Association since its organization. Mr. Leitch was prominent in church circles in Brooklyn, and was an active member of the Central Presbyterian Church of that city. He was also a member of many fraternal societies. He is survived by his widow and daughter and one son. The funeral services were held at his late home on Monday evening, the Rev. Dr. John F. Carson officiating. The interment was at Brewsters, N. Y.

The Dowman-Dozier Mfg. Company.

Under date of May 1, the Dowman Mfg. Company of Atlanta, Ga., George Dowman, president and general manager, announce that on account of the great increase in the business of the company, it has been found necessary to enlarge their factory in order to meet the growing demands of the trade. Accordingly, a new company has been formed, known as the Dowman-Dozier Mfg. Company, which began business on May 1 at the location formerly occupied by the Dowman Mfg. Company, 20 and 22 Trinity avenue, Atlanta. The new company, on account of increased capital and improvement in their plant, will enjoy exceptional facilities for doing the best work which modern power machinery can accomplish. Their line of manufacture includes architectural sheet metal work, galvanized iron and copper cornices, metal skylights, finials, crestings, &c., tin, slate and iron roofing, eave trough, conductors, hot air furnaces, Dixie ventilators, metal ceilings and tinners' supplies. The officers of the new company are George Dowman, president, and G. P. Dozier, secretary and treasurer.

The Niagara Combination Punch and Shear.

The shear part of the combined punch and shear built by the Niagara Machine & Tool Works of Buffalo, N. Y., and illustrated herewith, is intended for cutting plates or flat bars up to ½ inch thick. The punch portion, having a 12-inch throat, is suitable for plates and bars, also for punching the flanges and webs of I-beams, angles and channels. The capacity is a ¾-inch hole through ½-inch iron. The center part is intended for cutting off flat and round bars, angles and T bars, and it performs this work without deforming the profile. The machine is driven from tight and loose pulleys, worm and worm wheel, and has a very heavy fly wheel. The belt shifter is adjustable for drive at any angle. The worm wheel is entirely inclosed and runs in an oil bath. The end thrust of the worm is taken up by ball bearings to insure smooth running. A forged steel shaft runs the entire length of the machine, in bronze bearings at the ends, and carries three eccentrics, one for each of the working parts. The motion is conveyed to any of the slides by shifting a wedge between the proper eccentric and slide. The motion continues while the wedge is in place, and the slide will stop at the highest point after the wedge is withdrawn. To make the shear suitable for splitting sheets of any length and width the frame is made with an offset that allows the free passage of the two parts of the sheet, as far as it can be cut apart, one part going downward and the other continuing horizontally. The knives are made of solid tool steel, and adjustment is provided to take up wear. The punch is furnished with two die holders, one of them being suitable for punching holes in the web of I-beams and channels and the other for punching holes in flanges. Either one of the die holders will answer for plates and flat bars. A stripping attachment is fastened to the frame of the machine. The center part carries a set of knives for cutting off square and round bars, as well as for angles and T-bars, up to 3 inches. No exchange of knives is required for these various shapes.



The Niagara Combination Punch and Shear.

PERMANENT organization of the recently organized Monarch Iron & Steel Company was effected at a meeting held in Pittsburgh last week. The plant of the company at Parkersburg, W. Va., is nearing completion and will be ready for operation in July. As before noted, the product will be Planished Iron Sheets, manufactured under the Broomall patents.

Steel Ceilings Abroad.

Richard Lewis, who is well known in this country, having been for a number of years manager of the Norristown Tin Plate Works, at Norristown, Pa., has returned to Wales, his native country. An article in the English papers shows that Mr. Lewis has imbibed some good ideas during the years he has spent in the United States. He has taken over and is exhibiting at Swansea a number of samples of soft steel stamped sheets, such as are now so generally used in this country for interior decoration construction work, in the way of ceilings and side walls. It is said that Mr. Lewis intends to build a house in Swansea in which sheet metal decoration will be used throughout. There is not, up to the present, any establishment in England or Wales where sheet metal for interior decoration is manufactured. It would seem that there should be a large field for this class of goods in the United Kingdom. American steel ceilings and side walls have already been sent to South Africa and Australia, but do not appear to have made as yet the successful advance in these countries that was expected and which their merits should command. This comparative failure is probably due to ignorance on the part of the foreign sheet metal workers as to the best method of erecting steel ceilings and side walls. The art once learned, however, there is every reason to expect that these materials will become as popular in other parts of the world as they are to-day in the United States.

FLASHINGS.

THE annual convention of the Tin Plate Workers' International Protective Association gathered in New Castle, Pa., on Tuesday, May 6. The American Tin Plate Company have offered to sign the tin house workers' scale for the year beginning July 15, 1902, on the same basis as at present. It is probable that this proposition will be accepted.

FOLLANSBEE BROTHERS COMPANY, Pittsburgh, Pa., are sending out their usual monthly blotter in the interests of Follansbee's Roofing Tin Plates. A game of baseball is used to illustrate the issue for May, the point being that the trade will "make a hit" by using the firm's Roofing Plates.

THE PENN METAL CEILING & ROOFING COMPANY of Philadelphia are doing a large business at their Boston office, 18 Harcourt street, where they carry a complete line of the fine designs manufactured by the concern. This branch now has contracts for furnishing Ceilings in a number of important buildings, among them being a theater at Norwich, Conn., which will require 17,000 square feet, and a Boys' Club building, at Pawtucket, R. I., which will require 18,000 square feet.

THE BOSTWICK STEEL LATH COMPANY, Niles, Ohio, who at one time contemplated the removal of their plant to some other town, have decided to remain in Niles, having been able to secure a site on which they will erect a larger plant.

IT is reported that a Sheet mill is to be erected in connection with the new plant of the Louisville Boiler & Iron Company, Louisville, Ky. Davis, Kelly & Co. of Louisville, iron and steel merchants, are understood to be the promoters of this enterprise.

THE title of the firm of George C. Fuhrman & Co., 93 West Main street, Springfield, Ohio, manufacturers of Galvanized Iron and Copper Cornices, &c., has been changed to the Fuhrman-Follrath Company, William D. Follrath, who has been foreman for the concern for a number of years, having been admitted as a member of the company. In addition to manufacturing Galvanized Iron and Copper Cornices, Finials, Crestings, Ridgings, &c., the company make a specialty of tin, steel and slate roofing and spouting, and deal in and install Hot Air Furnaces, Stoves and Ranges.

THE improvements which the American Sheet Steel Company are about to make at their Old Meadow Mills, at Scottdale, Pa., will consist in the introduction of labor saving devices and of electric power in many of the departments in which steam has been used. Similar improvements are also to be made at the company's Scottdale mill in the same place. Both these plants will be thoroughly modernized with the object of securing an increased output.

The Niles Galvanizing Company of Niles, Ohio, have been incorporated with a capital stock of $10,000, to manufacture Galvanized Iron. The incorporators are H. J. Robbins, George B. Robbins, F. C. Robbins, W. H. Smiley and F. W. Stillwagon. It is understood that the capital of the company will shortly be increased.

The United Engineering & Foundry Company have purchased the Apollo Iron & Steel Company's foundry at Vandergrift, Pa., which was built a number of years ago for the manufacture of Rolls for use in rolling mills. The controlling interest was held by the Vandergrift estate, George G. McMurtry and Joshua Rhodes. Although operated in connection with the Apollo Iron & Steel Company and owned by the same interests, it was always a separate organization. The acquisition of this foundry gives the United Engineering & Foundry Company four large foundries, which together will have the greatest output of Rolls of any concern in the world.

Powers & Williams, Streator, Ill., issue a circular to the trade announcing that they have now completed and placed in operation a finely equipped factory for the manufacture of Skylight Glass. They have the latest system of leers and guarantee the Glass to be flat, well tempered, and in every way satisfactory. With their large capacity and good shipping facilities they claim that they are able to supply the demands of the Skylight trade for Grass, either in cut to size orders or in stock cases. The company are making Ribbed Glass of 1/8, 3-16, 1/4 and 3/8 inch thickness, and Rough Glass of 3-16, 1/4 and 3/8 inch. They are also manufacturing Window Glass of all kinds, as well as the Powers Automatic Chimney Top, the merits of which are well known to our readers.

James A. Miller & Brother, Chicago, Ill., are calling attention to the Corrugated and other Iron Roofing, Skylights, Cornices, Conductor Pipe, Gutter and similar lines, of which they carry an extensive stock and are prepared to fill orders with all reasonable dispatch.

The Moncrief Plumbing & Tinning Company, Jacksonville, Fla., began business in July last and are incorporated under the laws of the State of Florida. The president of the concern is R. L. Moncrief and the secretary Robert C. Trimble. On April 1 they opened in Atlanta, Ga., a branch manufactory, of which D. E. Moncrief is the manager. The company manufacture Skylights, Cornices and anything in the sheet metal line, and also do tin, iron and slate roofing. They purpose doing business over the whole of the Southern States, shipping from either Jacksonville or Atlanta, according as freight rates favor.

The Wheeling Mold & Foundry Company, who recently completed a large plant at Wheeling, W. Va., for the building of Rolls and Rolling Mill Machinery, have received a contract for the Sheet and Tin Plate mills for a new plant to be erected at Marietta, Ohio. They also have a contract for a large amount of Tin Plate Machinery for the new works of the McKeesport Mfg. Company, at Port Vue, McKeesport, Pa. The Wheeling Mold & Foundry Company will double their capacity for making Chilled Rolls, having a great many orders for these on hand.

The Empire Iron & Steel Company, a new corporation, who are building a Sheet mill plant at Niles, Ohio, have let the following contracts: Roll train for Sheet mills, to the Globe Foundry & Machine Company of Niles, Ohio; traveling crane, to the Case Mfg. Company, Columbus, Ohio; main buildings, to the American Bridge Company; boilers, to the Stirling Company, Barberton, Ohio; electric plant, to the Akron Electrical Mfg. Company, Akron, Ohio, the generator to be connected to a Brownell engine.

The Berger Mfg. Company of Canton, Ohio, manufacturers of Metal Roofing, have decided to erect an addition to their plant. The improvements provide for an addition to the cutting and painting department and a new blacksmith shop.

A report has gained currency that the Great Western Tin Plate Works of the American Tin Plate Company, at Joliet, Ill., which have been idle for some time, are about to resume work. The capacity of the plant is to be increased by the addition of new machinery.

The Youngstown Foundry & Machine Company, Youngstown, Ohio, builders of rolls and Rolling Mill Machinery, have recently bought considerable ground adjacent to their plant, which will be used at some time for extensive additions to their works. They have recently received a second 15-ton electrical crane, which is now being installed.

The Harrington & King Perforating Company, Chicago, have issued an announcement to the trade, under date of May 1, that they have removed their New York office to 114 Liberty street, in the new Engineering Building, situated in the heart of the machinery district, where with all the conveniences of modern equipment and a full line of samples they are prepared to give quotations as low as strictly first-class work will permit. They refer to the output of their Chicago plant as embracing every department of Perforated Metal Work, from the finest to the largest of perforations, and of such a variety of shapes of openings, in light and heavy metal, that scarcely any specification is beyond their reach.

The Mesta Machine Company, Pittsburgh, Pa., have a contract for a pair of 50 x 60 horizontal reversing engines for the Sheet mills of the Alan Wood Company of Conshohocken, Pa.

It is reported that the Barrett Mfg. Company, Chicago, Ill., in connection with the recent consolidation of manufacturing concerns making Tarred Roofing Papers and Coal Tar products, have bought the N. West Department of the Cambria Steel Company, which was the largest remaining competitor. The N. West Department, using the waste product of the Cambria Company in the latter's manufacture of coke, had become a factor in the business, the enterprise having been started a few years ago on account of the low price for Coal Tar paid by the Barrett Mfg. Company.

Drinking Water for Workmen.

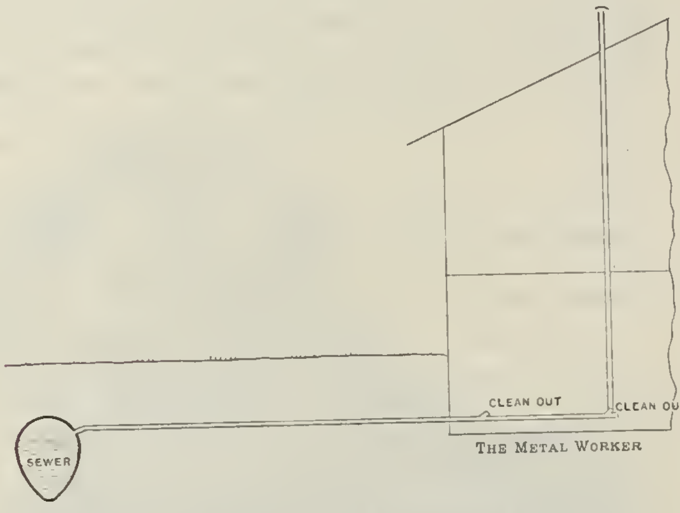
B. F. Avery & Sons of Louisville, Ky., describe as follows their experience in furnishing prepared drinking water to their workmen during hot weather, especially those employed in their forging, foundry and other departments where there is intense heat. They take stone jars or kegs holding about 10 gallons of water, filled with water and a small quantity of ice, pack the jar in a barrel with sawdust between the inner and outer vessels. Thus the water is kept cool with a minimum of ice. Each morning they place about 1/2 pint of oatmeal, rolled oats or any other form of crushed oats in the water. This crushed oats thus used makes the water a remarkable thirst quencher. During the several years that they have thus provided drinking water they cannot recall a case of heat prostration or illness due to excessive drinking of water by men employed in their shops where the heat is great. They also find that this water reduces the appetite for intoxicating drinks, and in general the effects are so excellent that their men are telling it to workmen in other shops and cities. The jar should be emptied and thoroughly cleansed every morning, as the oatmeal sours over night, and, of course, the drinking cup also ought to be scalded and scoured for obvious reasons each day. They believe that the water should be drawn from a spigot, as, of course, from a sanitary view the use of a dipper in the top of the jar is not as it should be, but the oatmeal clogs the spigot or strainer leading to a spigot. It has contributed not only to the comfort of the men, but has permitted them to continue at work when the heat might otherwise have prevented and has greatly reduced the temptation of the men to seek intoxicating cooling drinks. For a few days the oatmeal flavor may not be relished by all of the men, but very soon they find it palatable and are delighted by the relief afforded.

Sewer Connections Without Intercepting Trap.

While the use of the intercepting trap, or front wall trap, on house drainage systems is, in the majority of instances, required by law, there are some places where it is prohibited by law, and in others, where there are no laws on this subject, the plumbers use their judgment as to the use or omission of this device. We present below communications from a number of cities where the intercepting trap is either not in use or where its use is left to the option of the plumber, which, no doubt, will prove of interest to the plumbing trade:

A plumber in Alliance, Neb., says:

In my opinion all house sewers should connect with the main sewer by means of a 45-degree bend, instead of running into it at right angles. If the house sewer is in soft ground it is better to use extra heavy cast iron pipe, but if the ground is of such a character that it will support the pipe, I believe that glazed tiling is equally good for the purpose. I think that from the house to the sewer there should be a pitch of at least 2 inches to 10 feet, and the connection should be made at a point between the center of the sewer and the top. At the point where the soil pipe passes through the wall there should be a Y-branch, and the house sewer should connect into the Y side, leaving a straight run, so that it can be opened to remove any stoppage by means of a rod in case of necessity.



Sewer Connections without Intercepting Trap.—Fig. 1.—A Nebraska Connection.

In regard to the house trap, some people prefer them, but I am opposed to their use on the ground that the more stoppages that are presented to the escape of the gas that may be generated either in the sewer or the drainage system, the greater will be the force it will exert in order to get out where it is not wanted; so I omit the trap and provide a vent pipe, which runs through the roof of the house. If the main sewers are ventilated through the manholes in the street there should be a movement of air which will prevent any excessive generation of gas. It is far better to prevent and avoid trouble than it is to overcome it. If a good drum or anti-siphon trap is used on each fixture there will be no trouble with the plumbing system.

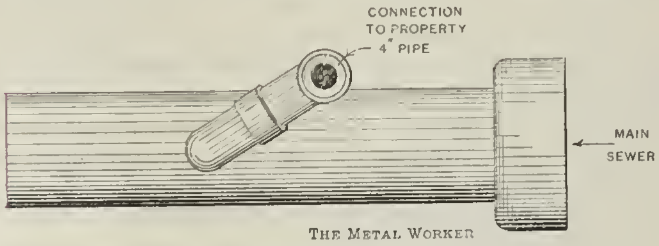


Fig. 2.—A Terra Cotta Sewer Branch.

I give, in Fig. 1, an illustration of ideas as to how the house sewer should connect with the main sewer and where the clean outs should be located.

A correspondent in Jacksonville, Fla., writes as follows:

Our system of sewerage is what is known as the Waring or Memphis system, consisting of one or more trunk lines with small laterals; consequently we have no intercepting traps, as each separate sewer connection contributes its share toward the ventilation of the street sewer. Our connections at the juncture with the street sewer are invariably made with terra cotta or glazed sewer pipe, the main sewer having a Y-branch, which is set at a slight angle, as shown in Fig. 2. Then a terra cotta one-eighth bend is inserted into the Y at that point which receives the terra cotta house drain, which is run to a point just outside of the wall. It will thus be seen that the connection at the sewer will be slightly above the level of the main sewer in the street. We find that a fall of ¼ inch to the foot is good practice, but have had to get along with much less, because here in many places the sewer is not very deep, owing to quicksands.

A correspondent in Mason City, Ia., writes:

The regulations of our city permit terra cotta sewer pipe that is salt glazed to be used from the sewer up to a point within 5 feet of the building, where it is continued on, using extra heavy cast iron soil pipe. A fall of less than 1 foot in 60 feet is not allowed, and the house sewer has a sharp downward pitch at the point of connection in the main sewer. We use no intercepting trap at the front wall, but an individual trap at each fixture, with a vent connection of the full size of the trap attached near the crown. Our city being located on a bed of natural rock our walls settle very little; consequently we have no trouble with breakage of the house sewer where it passes through the wall.

A plumber in Canton, S. D., says:

Our method of making sewer connections with the street sewer is in accordance with the State laws, which compel the city to put a 6-inch Y-branch on the main sewer line at every lot. In making the connection, we begin by taking out the cover or stop in the branch. Our sewers are generally made of salt glazed terra cotta sewer pipe. We use 6-inch pipe from the sewer to a point within from 6 to 10 feet of the house, and then 4-inch or 6-inch extra heavy cast iron soil pipe into the house and up through the roof without any intercepting trap, the piping being arranged as shown in Fig 3. We then back vent the traps on all the fixtures either by an extra pipe or carry up a separate vent pipe to the main vent stack in the attic. We have found that ⅛ inch to the foot makes a very good fall, but sometimes use 1 inch in 10 feet. We have had the best results by not using the trap on a sewer connection, but always leave a clean out plug at the bottom. I prefer to leave a clean, open passage for the air from the sewer up through the house system and out through the roof. This prevents, through the frequent and rapid circulation of air due to winds, any generation of obnoxious gases.

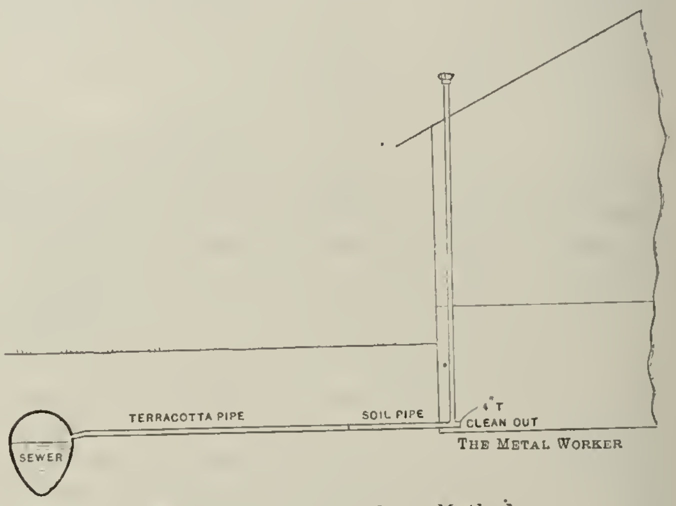


Fig. 3.—A South Dakota Method.

In the opinion of a plumbing house at Fort Worth, Texas, no terra cotta pipe should be placed inside or under any building, but instead extra heavy cast iron soil pipe, properly coated with prepared tar, should be used until a point a few feet beyond the building line is reached, when salt glazed terra cotta pipe may be used. They add:

The connection to the main sewer, whether it is made of pipe or brick, should be as high in the main as the fall will permit. The house sewer should have a uniform pitch all the way down, if possible, to the point of connection, which should be so made that the pipe connected with the main will point in the same direction that the water in the main flows, as shown by the plan in Fig. 4. This should be made with a Y-branch, which is far better than a tee. The fall given to sewers by some engineers is but 10 feet in a thousand, but in practice this is too fine, especially if one of the feet in a hundred is all in one joint. A quarter of an inch to the foot is sufficient to carry away everything but rags, bones, bricks and jewelry.

Front wall traps are not used here, nor have we seen one in use for 10 or 12 years. Of course, if, as is usually the case, the wall settles and any kind of a tight joint is made around the soil pipe where it passes through the wall, the pipe will either be broken or thrown out of line. In order to avoid this, if the space around the pipe is made tight with clay of the consistency of tough dough it is the best means we know of for keeping out water and making a tight joint, providing the clay is packed around the pipe on the outside and inside of the wall, but not in the hole in the wall through which the pipe passes, and this should be cut or left large enough so as to give some room for settling. Those who are called upon to do such work in the State of Texas are compelled to pass an examination and show their competency before they are given a license, and I think that this should be required of all who undertake to do such important work, from the sanitary point of view, as plumbing.

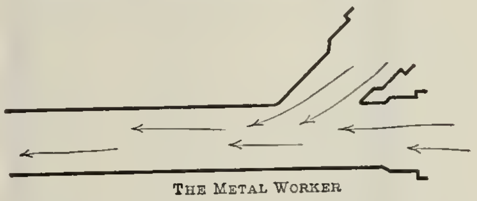


Fig. 4.—Plan Showing How House Sewer Should Connect with Main Sewer.

A plumber of Richmond, Va., writes:

Our city sewers are made of both brick and terra cotta salt glazed pipe. In my own opinion, there is no objection to using salt glazed terra cotta pipe from a point outside of the house wall to the sewer. If the main sewer is made of brick the connection should be made with it above the water level, or just at the arch on the top. If the main sewer be terra cotta pipe connection with it should be made by means of a Y-branch. Here we give all the fall we can to the house sewer, but not less than ¼ inch to the foot.

There is an objection to the use of a front wall trap, as it lets out the odor at the front door of the house at times, and we have abandoned its use in our city altogether. I do not see the necessity for its use, so long as every trap is back vented and the main lines of the soil and vent pipe extend to the top of the roof. If terra cotta pipe is used on the foundation wall a relieving arch should be built over it, and if it comes through above the bottom of the cellar extra heavy cast iron soil pipe should be used, and the opening should be cemented all around the pipe on the outside to make it tight. We never use terra cotta pipe under a house, as it is against the ordinance, which requires that extra heavy soil pipe shall be carried 3 feet outside of the house walls.

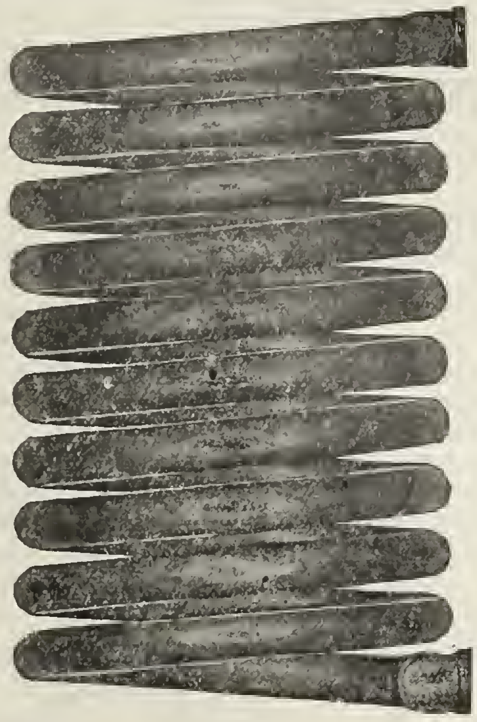
The Calorific Heater & Mfg. Company.

A strip of land on the Lehigh Valley Railroad, at Allentown, Pa., has been purchased by the Calorific Heater & Mfg. Company, who have taken out articles of incorporation for the purpose of manufacturing Calorific steam and hot water heaters, radiators and heating appliances. On this property the company intend to erect a two-story brick building, 50 x 141 feet; a foundry building, 100 x 114 feet, and a one-story frame storage pattern building, 20 x 30 feet, which will be covered with sheet iron. The plant will be equipped with core ovens, six traveling cranes, elevator and scales and a cupola, also drill presses, lathes and other machines for fitting up and finishing boilers and radiators. It is said that the plant will be fully equipped with the best and most modern machinery for turning out the Calorific heaters expeditiously and economically. These heaters, which have been on the market for several years, have not only demonstrated their excellence, but have also secured a wide popularity, so that the company are now enjoying an increased demand for them.

Frank C. Goff & Co., Chicago, Ill., are sending out an announcement that they have sold out their Stove and Hardware business and will in future devote entire time to steam and hot water heating and ventilating, both as engineers and contractors.

The National Pipe Bending Company.

In the accompanying illustrations are shown some styles of pipe coils, which are made by the National Pipe Bending Company of New Haven, Conn. The coil shown in Fig. 1, which is designated by the company as a plain spiral coil, can be furnished in either brass, copper or iron pipe of any size from ⅛ inch to 4 inches in diameter, and in any diameter of coil, the coil being of any length that may be desired. The coil illustrated shows elbow fittings on the ends to pass through the walls of the heating chamber in which it may be arranged. It is suitable for placing in the combustion chamber of a large stove or hot air furnace, to be used for heating water for domestic purposes or for circulation through radiators placed in distant parts of a building. The coil shown in Fig. 2 is adapted for a similar use and arranged so that both the inlet and outlet to the coil pass out through the dome of the stove or furnace.



National Pipe Bending Company.—Fig. 1.—A Plain Spiral Pipe Coil.

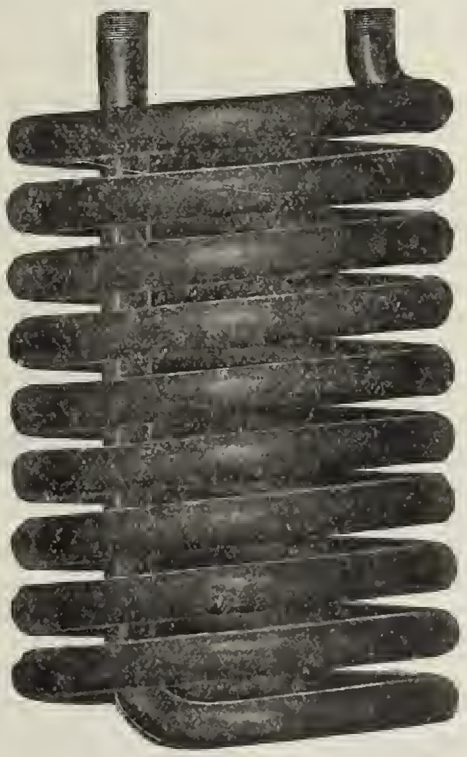


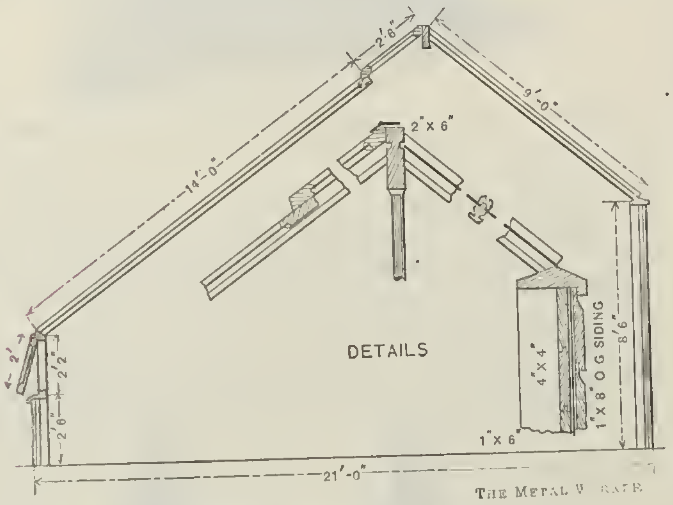
Fig. 2.—A Spiral Pipe Coil.

The plant of the National Pipe Bending Company is equipped with electrical welding machinery and bending machinery, so that a continuous coil may be made of as many lineal feet of pipe as may be necessary for special work. The shapes and varieties of the coils into which the company can bend pipe are practically unlimited. They are such as may be used in tanks or vats for boiling the contents, or on the walls of buildings for radiators, or as box coils for indirect radiators. They also make an extensive variety of bends, such as expansion bends for steam pipe, offset bends, wide sweep bends, right angle bends and return bends. The steam fitter or plumber who is confronted with a problem in pipe bending will do well to secure one of their catalogues, in order to become acquainted with the great variety of goods which they can furnish.

HEATING GREENHOUSES TO DIFFERENT TEMPERATURES.

BY MARK DEAN.

Greenhouse construction throughout the country is perhaps more uniform than that of any other class of buildings which require heat. As a matter of fact, their average exposure is over 80 per cent. double strength glass. Furthermore, what wall surface they have is practically the same, being rough boards inside and matched boards outside, with paper between. The detail of the construction is shown in Fig. 1. While the conditions are very much the same in all cases, they are nevertheless hard to overcome, because the loss of heat through the glass is very rapid; there is no dead air space and no stored heat in the walls. Therefore the radiation must be kept continually up to temperature, and there must be surplus boiler capacity to allow for poor firing, poor coal, poor draft or other causes which might allow the temperature to drop sufficiently to stun the plant life, if not seriously damage it. This in either case would mean financial loss to the owner, which means loss of trade to the fitter and a black eye for the boiler manufacturer. At least the owner generally does his part toward giving the boiler a bad name.



Heating Greenhouses to Different Temperatures.—Fig. 1.— Elevation and Section Showing Construction.

On account of these extra requirements, the average boiler, not having special greenhouse ratings, will only carry about one-half to two-thirds the amount of radiation which it is listed to carry in ordinary house heating.

To determine the boiler capacity necessary for any greenhouse, first ascertain the total number of square feet of glass equivalent in the house. This is done by getting the length of sash bars, front, back and in side walls, if any. The combined length of the sash bars, multiplied by the length of the house, gives the total amount of glass exposure in roof and side walls. To this must be added one-third the amount of wall surface. Thus, in the greenhouse 21 x 120 feet represented in Fig. 2 the rear sash bars are 9 feet long, front sash bars 16½ feet long, front side wall sash bars 2 feet long; total, 27½ feet, which, multiplied by the length, 120 feet, equals 3300 square feet of glass in roof and side wall. The front wall below the glass is 2½ feet high; the rear wall is 8½ feet high and has no glass. The total of the two walls equals 11 feet, which divided by 3 to reduce to glass equivalent, equals 3.66. This, multiplied by the length of the house, 120 feet, equals 439 square feet of glass equivalent. One end of the house is exposed, in which there is 132 square feet of glass and 50 square feet of wall surface, equivalent to 16 2-3 square feet of glass, making a total of 3887 2-3, or practically 3890 square feet of glass equivalent.

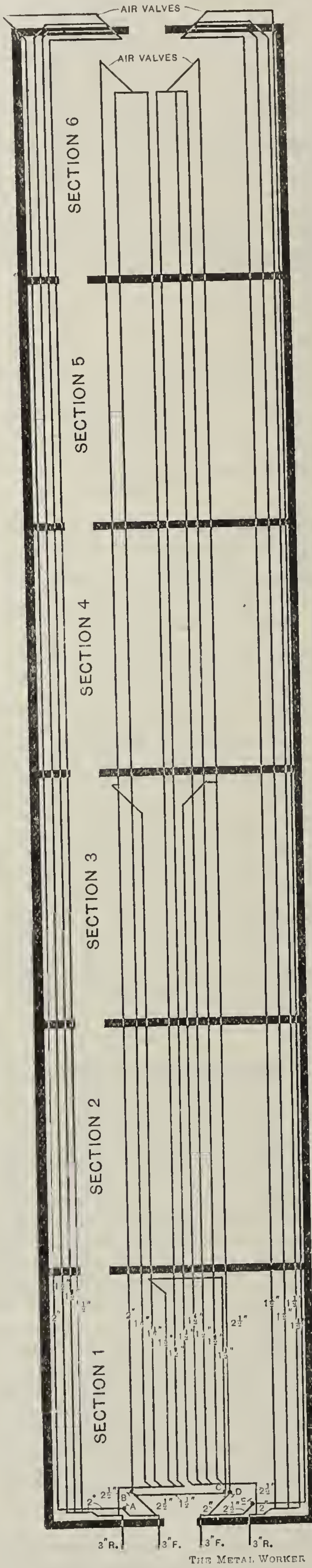


Fig. 2.—Plan of Greenhouse.

To heat by hot water to 70 degrees F. in zero weather 1 square foot of radiation will be required for each

3 square feet of glass or its equivalent. Therefore it will require 1297 square feet of radiation, which the boiler must be able to easily heat to 170 degree F., and maintain that temperature from eight to ten hours.

The particular greenhouse shown in Fig. 2 is divided into six compartments, requiring three different temperatures, for experimental purposes. Section No. 1, shown in Fig. 3, is to be heated to 70 degrees F.; sections Nos. 2 and 3, shown in Fig. 4, to 60 degrees F., and sections 4, 5 and 6, shown in Fig. 5, to 55 degrees F.

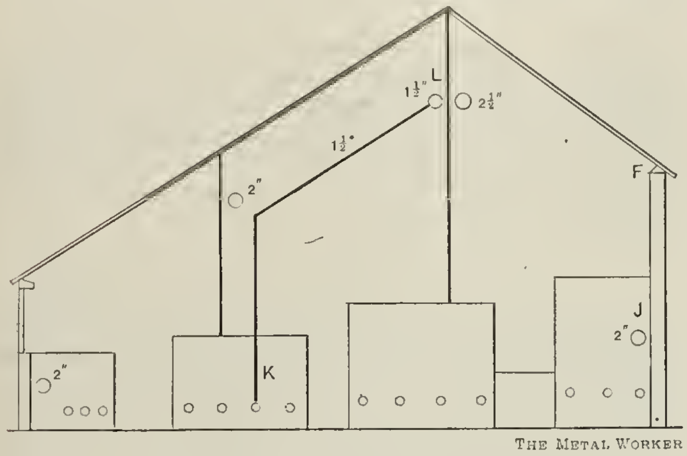


Fig. 3.—Elevation of Section 1.

When figuring on the number of pipes required it is only necessary to consider 1 lineal foot of the house. It has already been noted that the total length of sash bars on roof and front side is 27½ feet, plus the glass equivalent of the walls (1 foot long), which is 3.66, making a total of 31.166 square feet of glass equivalent for each lineal foot of the house.

For house No. 1 divide this by 3, which gives 10.38 square feet of radiation per lineal foot of house. This amount of radiation, 10.35 square feet, is to be divided between the mains and the heating pipes. You already have the total amount of radiation, and the mains must be large enough to carry that; therefore, it becomes a simple matter to determine how many pipes, and of what size, are to be used. However, it is always preferable, for both mains and heating coils, to use as small pipes as possible consistent with the length of the house to be heated; because, by subdividing the mains and using small pipes in coils, there is less water to be warmed and the radiation can be more evenly distributed through the house, and drafts, which are detrimental to plant life, are reduced to a minimum.

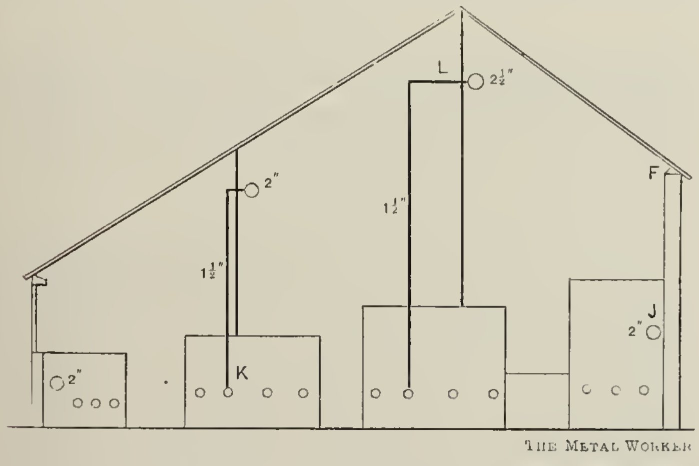


Fig. 4.—Elevation of Sections 2 and 3.

In many catalogues will be found a list giving the square feet of radiation per lineal foot of all sized pipes. As we are figuring on but 1 lineal foot of the house, it is only necessary to consider the amount of radiation per foot of the different sized pipes. First, add together the radiation in 1 foot of the main or mains; subtract this amount from the total required per foot of house, and the result will be the amount of radiation to be used per lineal foot of coils. Divide this number by the amount of radiation in 1 foot of the pipe to be used in the coils, and the result will be the number of pipes. Thus, in section 1 there are:

3 2-inch flow pipes, 0.622 square foot per lineal foot....	1.866
1 2½-inch flow pipe, 0.753 square foot per lineal foot....	0.753
1 1½-inch flow pipe, 0.494 square foot per lineal foot....	0.494
Total..	3.113

Ordinarily, only two decimals are used.

Total amount per foot of house, 10.35 — 3.11 = 7.24, to be divided into coils of 1½-inch pipes; therefore, divide by 0.494 to find how many. 7.24 ÷ 0.494 = 14.65. It is not possible to subdivide a pipe, therefore use 15 1½-inch pipes in coils.

There is the same amount of glass equivalent per lineal foot of house in sections 2 and 3 (31.166 square feet). But a different division is used because only 60 degrees F. is required; therefore, dividing 31.166 by 3½ shows that 8.9 square feet of radiation is required per foot of house. The number of pipes required to make this amount may be found as described above for section 1.

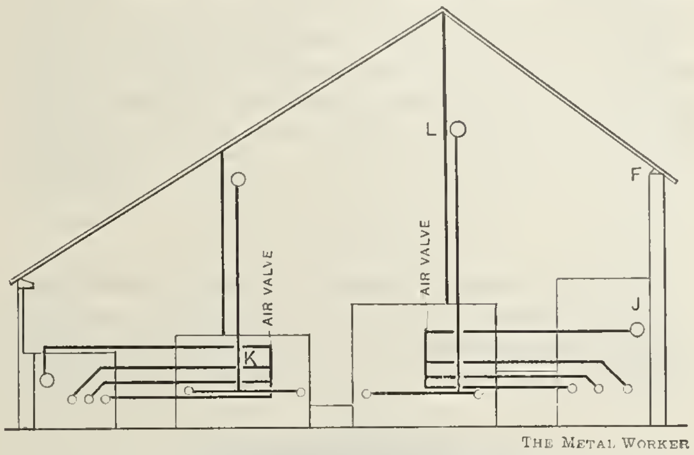
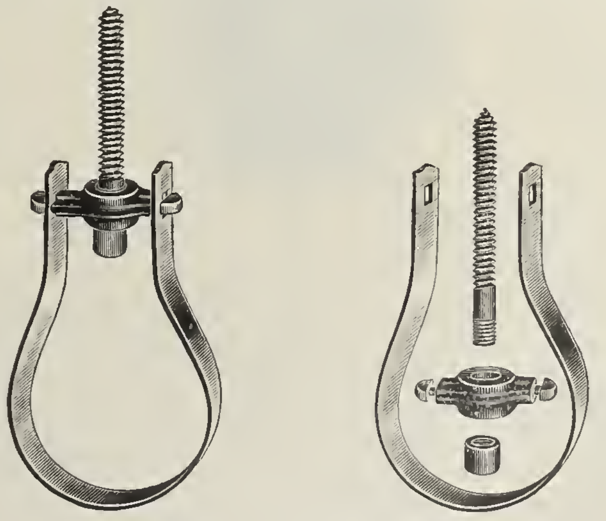


Fig. 5.—Elevation of Sections 4, 5 and 6.

Sections 4, 5 and 6 have the same amount of glass equivalent per foot of house. But here again is another temperature; 55 degrees is required, which will require 3¾ square feet of radiation per foot of glass. Therefore, dividing 31.166 by 3¾ shows that 8.31 square feet of radiation is required per foot of house. In section 6 the conditions are somewhat different on account of the exposed end. To overcome this the side pipes are extended across the end.

The Crawford Pipe Hanger.

A cheap, practical hanger is the claim made by the Crawford Specialty Company, 321 Warren street, Boston, Mass., for the Crawford pipe hanger, shown herewith. It consists of a lag screw and yoke, a nut and a hanger band. In use it is only necessary to adjust the lag screw, put on the cap and yoke, then slip the hanger band over the pipe, and hook the holes in the ends over the ends of the yoke. This character of hanger gives a wide range of length, and can be ultilized in adjusting the grade of the pipes, whether they be the steam or hot water pipes of the heating contractor, or the soil pipes of the plumber. The bands are made of spring steel and the yokes of malleable iron. The hangers are made to fit all sizes of pipe, from 2 to 6 inches. Clamps can be furnished for use with iron beams when desired.



The Crawford Pipe Hanger.

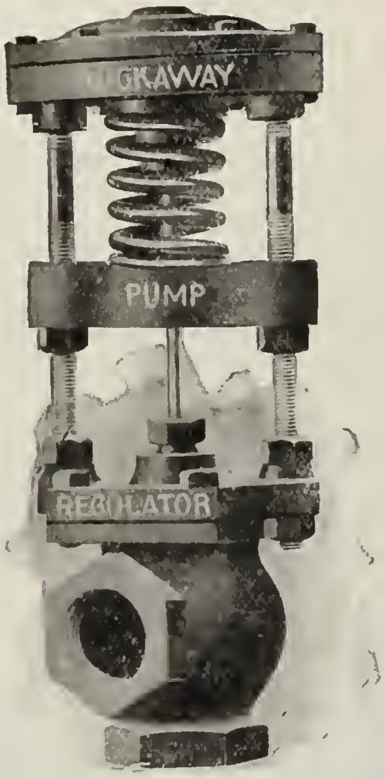
THE NATIONAL COMMITTEE OF THE CONFEDERATED SUPPLY ASSOCIATIONS.

A practically full attendance of the members of the National Committee of the Confederated Supply Associations was secured at the meeting held at Niagara Falls last week, when matters of interest to the manufacturing and jobbing interests in the plumbing trade were discussed. One of the most notable features was the practically unanimous report from all sections that the Chicago Resolutions had received the attention of the members of the Supply Associations throughout the country and that they have the unanimous support of all their members. These resolutions are looked upon as eminently fair to all concerned and are regarded as supporting the principle of trade protection so completely that there is no occasion for further concessions.

We learn that there is a possibility that the summer meetings of the different Supply Associations, instead of being held at different places, may, through changes of dates or such other alterations as may be necessary, be held at some one place. This, however, is still under discussion and as yet nothing has been settled to this end.

The Rockaway Automatic Pump Governor.

In the accompanying illustration is shown one of the many devices manufactured by Kieley & Mueller, 7 to 17 West Thirteenth street, New York City, to assist the heating contractor and engineer in meeting the demands of their customers. The Rockaway pump governor is designed for automatically starting and stopping steam pumps run to maintain a pressure and for controlling them so as to maintain a uniform pressure on the discharge side at all times while being operated. This governor meets the demand for one with a diaphragm and spring, and is guaranteed as a steam tight operating valve, to avoid any possibility of pressure accumulating on the pump to which it is attached sufficient to operate it at all times when a pressure is not desired. It may be used where it is desired to keep up a pressure of steam, water, gas, ammonia, air, or other service systems on which uniform pressure is required, and it may also be used on pumps supplying water to house tanks on the roof, or hydraulic machinery of elevator systems. When the pressure in such a system falls the spring opens the steam valve, so that the steam starts the pump in operation until the pressure is brought up again to the desired point. This valve is made in eight different sizes, adapted for all sizes of pipe from 1 inch to 4 inches.



The Rockaway Automatic Pump Governor.

New York City Notes.

Business is beginning to pick up and many contracts are being given out. It is to be hoped that the increased rate of wages has been considered in estimating for these contracts.

* * *

Matters in Richmond Borough are flourishing, and most of the plumbers there are busy. The association has appointed David S. Melville as business manager, and he is busy looking after matters of interest to the trade, paying especial attention to unlicensed plumbers doing work and those plumbers who are in the habit of loaning their licenses.

* * *

Among the new jobs lately given out in Manhattan is the Lutheran Evangelical Church at Sixty-fifth street and Central Park West, where the plumbing has been secured by T. J. Byrne. J. J. Kuhn has four apartment houses, erected under the new Tenement House law, on 137th street between Seventh and Eighth avenues. B. W. Rod of 306 East Second street has three apartment houses at 144 to 148 East Twenty-second street and four apartments at 136 to 142 Seventeenth street. Charles Stuart has an eight-story apartment on 129th street between Madison and Park avenues. Wm. J. McDermott is plumbing the Brewster carriage factory on Forty-eighth street. E. J. McCabe & Co. of 862 Park avenue are doing the plumbing in the Central Brewing Company's new building on Sixty-eighth street near Avenue A. Lasette & Murphy of 2267 Broadway are doing apartment houses on 112th street west of Amsterdam avenue, and on Seventy-sixth street west of West End avenue.

* * *

The *City Record*, under date of May 6, published the list of master plumbers registered in the Bureau of Buildings in the Borough of Manhattan. Steps should be taken to have a list of all registered plumbers in all the boroughs published.

* * *

The friends of Michael Hughes will be pleased to learn that he has recovered from the injuries received by being thrown from a trolley car some little time ago. He has a fine job to do in seven apartment houses on 137th street west of Seventh avenue.

* * *

I. J. Barth of University place is busy overhauling the building on the corner of Broadway and Eighteenth street. John Tucker is to do the plumbing in the new Progress Club House on the corner of Eighty-eighth street and Central Park West. W. J. Bailey has the plumbing of a new synagogue being erected at 117 to 121 East Eighty-fifth street. Thos. J. Flanagan of 35 Jane street has an apartment house to do at 228 to 230 West Thirteenth street. H. S. Casey of Amsterdam avenue and 123d street is plumbing an apartment house on 137th street east of Eighth avenue.

* * *

One of the largest jobs uptown is being done by J. Rendall of 741 Forest avenue, Bronx, at Bradhurst avenue and 150th street, Manhattan. It is a building nine stories high and 95 x 95 feet in area.

A DEAL is pending for the taking over by the Crane Company of Chicago of the Utah Plumbing Supply Company's business in Salt Lake City, Utah, which has grown to such proportions that a large new building to accommodate the expansion is now in process of erection. It is stated that the consideration to be paid is in excess of $50,000, or at the rate of $115 a share, for the control of stock held by members of the Ellerbeck family. The major portion of the stock is owned by the estate of the late Brigham M. Ellerbeck, who was the founder and executive head of the institution. It is understood that the Crane Company will operate the business in Salt Lake as a branch of the Chicago house.

Heating and Plumbing Notes.

The annual convention of the Connecticut State Association of Master Plumbers will be held in the Masonic Temple at Bridgeport, Conn., on Wednesday, May 14. The call urges that all members attend this meeting, as matters of great importance will be brought before the convention.

The National Pipe Bending Company, New Haven, Conn., inform us that they have just completed an addition to their shop, 100 x 60 feet, which will be used for the manufacture of Iron, Brass and Copper Coils, and also Coil Stoves and Furnaces. These increased facilities will enable them not only to furnish Coils for large work, but to fill orders from plumbers and heating contractors for special Coils needed in their work.

The Kennedy & Sullivan Mfg. Company of Holyoke, Mass., notified their customers that, in view of the demand of the Steam Fitters' Union for increased pay, they would close their steam fitting department on May 1, and that this branch of their business is for sale. In the opinion of the company the demands of the workmen could not be granted and the steam fitting branch of their business maintained with profit.

John Jackson, secretary of the School Board, will receive at Benton avenue, Allegheny, Pa., until May 13, bids for heating and plumbing the North End School Building on Meyran avenue.

Michael Mulvihill, who died Friday, May 2, in his sixty-fifth year, at his home, 1069 Greene avenue, Williamsburg, N. Y., was for 25 years in the employ of the Pennsylvania Railroad and for many years was the superintendent of the company's plumbing department. He was born in Ireland, and at an early age came to America. He is survived by a widow, four sons and four daughters.

The Vanderman Plumbing & Heating Company, Willimantic, Conn., have the contract for plumbing the new factory of the Atlantic Screw Works.

Robert Allison, president of the Board of Public Service of Cincinnati, Ohio, will receive bids until May 19 for heating and plumbing the City Infirmary, at Hartwell, Hamilton County, Ohio.

Jeremiah Foster, chairman of the joint special committee for the erection of a new school house at Ryal Side, Beverley, Mass., will receive bids until May 13 for the heating and plumbing systems.

J. R. Pawling, chairman of the Jefferson County, N. Y., Committee on Buildings, will receive bids until May 14 for heating and ventilating the County Court House, at Watertown, N. Y.

Rouget & Harper bid $5950, and secured the contract for heating and ventilating the Court House, at Rome, N. Y.

The master plumbers of Washington, D. C., have issued a circular recently stating that they are notifying their attorney to institute injunction proceedings against any man or body of men interfering with the conduct of their business, or coercing nonunion men into quitting their employ. It is pointed out that the law is very strong on the point of conspiracy, and the Master Plumbers' Association propose to take full advantage of it. They have made a substantial appropriation to carry these plans into effect.

Stanley G. Flagg & Co., Philadelphia, Pa., have advanced the wages of the 350 employees at their Pottstown, Pa., plant, 10 per cent., making an increase of 32 per cent. in the past 18 months.

Scholl & Semple, Youngstown, Ohio, bid $20,000 and were awarded the contract for the plumbing for the new block of buildings being erected by the Dollar Savings & Trust Company in that city.

Work has been begun on the new power plant for the Eaton, Cole & Burnham Company at South avenue, Bridgeport, Conn. The new building will be 47 x 62 feet in size, and of steel and brick construction. This is the beginning of the increased facilities of the company for manufacturing their extensive line of Valves and Fittings for steam, water and gas.

As evidence of the activity enjoyed by some who are engaged in the manufacture of goods of interest to the heating contractor, we are informed that the Kewanee Boiler Company of Kewanee, Ill., are well occupied at the present time in taking care of orders with which they have been favored.

Steward Brothers are moving their plumbing business into a fine new store in the Merrill Block, on Russell street, Salem, Mass.

Lewis & Kitchen, heating and ventilating engineers, Ninth and Broadway, Kansas City, Mo., have been recently awarded contracts for the introduction of their furnace fan system in the following school buildings: New Ward School, Iola, Kan.; new High School Building, Boise, Idaho, and High School, Chanute, Kan., as well as four ward buildings, Chanute, Kan. They are also equipping two new 12-room schools at Independence, Kan.

The Buckingham-Routh Company, New Haven, Conn., have the contract for heating the new buildings of the Graduates' Club on Elm street, and will install an Ideal Steam Boiler, made by the American Radiator Company.

Hugh McPartland, New London, Conn., is doing the plumbing in a new block of buildings for William Astheimer. The steam heating work will be done by the Hopson & Chapin Mfg. Company of New London.

The town of Gardner, Mass., has recently passed new plumbing regulations, consisting of 25 sections, under which plumbers are required to take out a permit for doing plumbing work.

Phelps Brothers, 284 Pearl street, New York, are distributing an eight-page folder devoted to the interests of the Pennington M. B. M. Steam and Hot Water Heaters. They are prepared to ship promptly the Heaters made with grates 20 inches wide in eight different sizes, rated to carry from 250 to 950 square feet of surface. A Heater which will have a grate 30 inches wide is also well under way. These Boilers are of the vertical sectional type, having a large fire surface. The flues are so arranged as to secure a long fire travel.

R. A. Tarbut has been appointed city plumber of Monett, Mo.

The Urbauer-Atwood Heating Company of St. Louis, Mo., have increased their capital stock from $6000 to $25,000.

The Supervising Architect at Washington, D. C., will receive bids until May 28 for heating the Post Office Building at Fitchburg, Mass.

Freney Brothers of Indianapolis, Ind., bid $6128 and have been awarded the contract for plumbing the Indiana State House.

The Erie Pump Company of Erie, Pa., recently shipped a carload of pumps to the Philippine Islands and another carload to Yucatan.

The Board of Police Commissioners of Baltimore, Md., have received a request from the plumbers that they see to the enforcement of the law in relation to plumbers working without licenses. Patrolmen will be instructed to ask plumbers who are at work on their beats for the proper licenses.

The Richmond Stove Company, Norwich, Conn., having well under way the completion of two large buildings, giving an increased capacity for the construction of the Richmond Boilers, inform us that during the next six weeks they will issue an entirely new Boiler catalogue, showing their line to better advantage than previous issues, and containing information which will be of interest to all who make a specialty of steam and hot water heating.

The Standard Sanitary Mfg. Company of Pittsburgh, Pa., are filling a large contract for Enameled Bathtubs, for shipment to St. Petersburg, Russia.

The Board of Education of Sayre, Pa., will receive bids until May 20 for heating and ventilating a new two-story brick school building in that town.

A new company, to be known as the Pittsburgh Valve & Fittings Company, have purchased a 70-acre site in Barberton, Ohio, and will erect a large plant for the production of Plumbers' Fixtures and Supplies. W. A. Johnson and O. C. Barber of Barberton and M. J. Alexander and others of Pittsburgh are interested in the new company. It is stated that the plant will comprise eight buildings—five 200 x 40 feet, one 250 x 50 feet, one 106 x 50 feet, and one 450 x 60 feet. The site selected has a frontage of nearly 2400 feet on the Erie Railway tracks. F. O. Weary of Akron is preparing plans for the plant.

Orders recently booked by the American Blower Company of Detroit, Mich., include apparatus for installation in the following buildings: Custom House and Post Office, San Francisco, Cal; Queen's University, Kingston, Ont.; Buhl Club House, Sharon, Pa.; Walker School, Flint, Mich.; Pingree School, Detroit, Mich. They have also received an order from the Ohio Leather Company for a heating and drying system for their new plant at Girard, Ohio.

President M. J. Drummond of the Glamorgan Pipe & Foundry Company of Lynchburg, Va., has notified the Pipe foundry employees of an advance of 10 per cent. in their wages. This company are one of the largest producers of Cast Iron Gas and Water Pipe in the country, having large Pipe foundries at Lynchburg, Va., and Radford, Va. Seven hundred men are affected by this advance.

The Curtis & Pierpont Company, New Haven, Conn., are doing the plumbing in the new factory of the Winchester Repeating Arms Company, and are also installing a hot water system in the residence of I. C. Moran.

George W. Couch, Hartford, Conn., is installing Thatcher Combination Hot Air and Hot Water Heaters in the residence of Samuel Clark, and in two other fine houses that are being erected by Nevels Brothers.

Wellington & Miller, Bridgeport, Conn., are installing a Griunell Sprinkler system in the factory of the Bridgeport Brass Company. The firm have taken the agency for the Metropolitan Automatic Injector.

The West Virginia Plumbing & Heating Company of Charleston, W. Va., bid $5475 and secured the contract for heating two large buildings for the Lewisburg Female Institute. They also secured the plumbing contract at $1275.

J. B. Farnsworth & Co., Leominster, Mass., are enlarging their plumbing establishment at 12 Sommer street, by building a two-story addition the entire length of the present building.

Contracts for plumbing new school buildings in Memphis, Tenn., from which the clause in reference to the employment of union labor has been eliminated, have been awarded to Brown & Borum and J. A. Balley & Co. of that city.

The Pond & Hasey Company, 231 Fifth avenue, Minneapolis, Minn, make a specialty of heating with steam, hot water and hot air, particularly in relation to the heating and ventilating of school houses. They have a fine sample room and a large warehouse. The company are the agents for the Magee Heaters, and have recently added five carloads of these Heaters to their stock.

New Firms and Changes.

McCaffrey & McDougall have started a plumbing, roofing, heating and general jobbing shop on Main street, Ridlonville, Maine.

John A. Brooks succeeds the plumbing firm of Moore & Brooks, 347 Bancroft street, Toledo, Ohio.

The Manhattan Sanitary Trap Company of New York City have been incorporated with a capital of $10,000. The directors are: S. C. Alger, E. W. Powers, New York, and P. J. March of Troy, N. Y.

Allen & Reed have been incorporated at Providence, R. I., with a capital of $80,000, by Philip Allen, W. G. Reed and B. J. Horton, to conduct a plumbing business.

McAtee & Lewis are a new plumbing firm at 7 East Front street, South Oil City, Pa. Both members of the firm are experts, having graduated from the shop of the late John Robison. They will do plumbing, gas and steam fitting and carry a line of goods for these purposes so as to fill orders promptly.

The Keystone Valve & Mfg. Company of Pittsburgh have been granted a charter with a capital of $100,000. They have opened temporary offices on Carson street, in the South Side, Pittsburgh, and intend to build a plant in that city for the manufacture of a newly designed steam valve.

The Lebanon Iron & Steel Company, Lebanon, Pa., have been incorporated with a capital stock of $50,000, by Paul H. Dennison, Harry M. Kurtz, William S. Stokes, William H. Tyrol and J. W. White of Philadelphia, to purchase the Lebanon Rolling Mill plant. The company will erect additional mills and manufacture Wrought Iron and Steel Pipe and Tubes.

The C. R. Sargent Company, Kittery, Maine, have been incorporated with a capital stock of $10,000, for the purpose of manufacturing and dealing in Plumbers' Supplies. The officers are O. H. Nelson, Newburyport, Mass., president, and Horace Mitchell, Kittery, Maine, treasurer.

The Martin Anderson Company, with principal office at 13 East Commerce street, Bridgeton, N. J., have been incorporated with a capital stock of $100,000, for the purpose of manufacturing Plumbers' and Tinsmiths' Supplies, &c. The incorporators are Charles C. Woodruff, Charles W. Dare and Edward P. Laning.

A. O. Burtill has opened a plumbing shop at Boothbay, Maine.

New Publication.

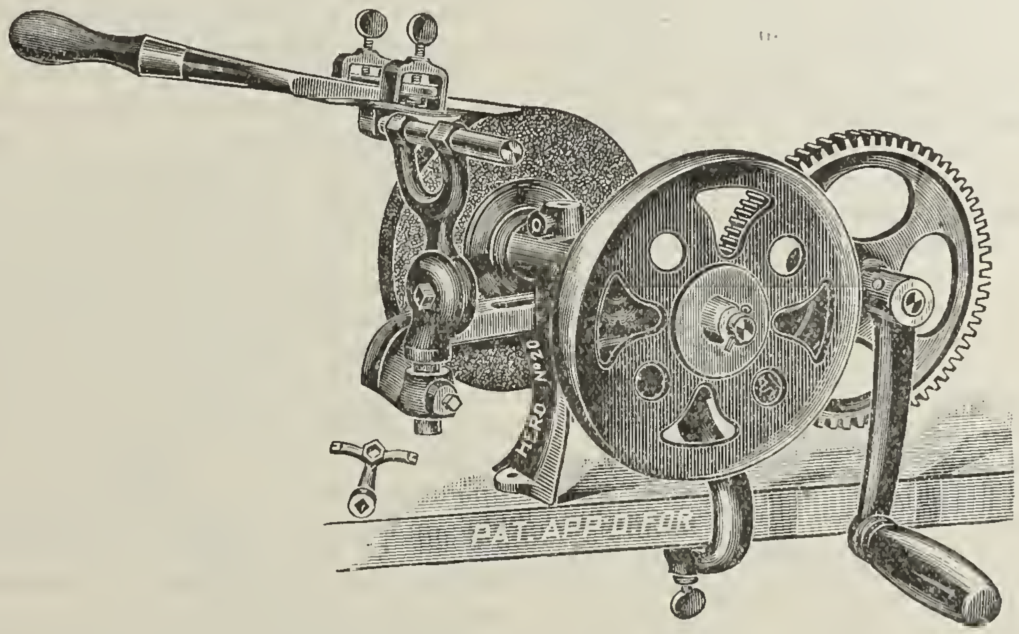
Dean's System of Greenhouse Heating. By Mark Dean. Published by Mark Dean, Boston, Mass. Price, $2. Size, 5½ x 7¾ inches. 46 pages. Illustrated.

This little book will be found valuable for reference on the desk of the heating contractor, whether he makes a specialty of greenhouse heating or general work. The first section is devoted entirely to a method of arriving at the amount of heating surface required for maintaining the different temperatures in greenhouses with either steam or hot water. A useful feature is the tables, by which the radiation for greenhouses of any size and to maintain any temperature may be readily determined. Another valuable time saving table enables the quick calculation of the number of pipes of different sizes that will be required to expose the amount of radiation previously determined. A method of computing the radiation required for greenhouses and conservatories of irregular size and shape is also presented. Another table that will be found of general use gives the radiating surfaces of pipes, so that if a heating contractor has to put a coil in a stove or furnace for heating water for a given amount of radiation, when the amount of surface is determined, by a glance at the table the length of pipe that will be required to expose the surface can be readily found for pipes of any size, from ¾ to 12 inches in diameter. This table will also be found useful in determining the amount of pipe required in box and wall coils, also for coils to be placed in tanks or vats for heating the contents. Table are also presented giving the circumference and area of circles, the size of supply and return pipes for steam and hot water systems for various amounts of radiation, and other details of interest to the heating contractor.

Not the least interesting and important portion of the book are the four pages devoted to guide posts in which attention is called to many little features, such as chimney draft, reaming of pipes, twin connection of boilers and many other things that are equally important, whether in a greenhouse heating system or a plant in a building of any other kind. A standard price-list of wrought iron pipe and cast iron fittings for wrought iron pipe is also given, and on one page is shown the rated capacity of boilers for hot water and low pressure steam heating. To those who are called upon to heat greenhouses, whether beginners or experienced men, the book will be found of special convenience, owing to the facility with which the information on sizes may be secured without laborious calculations. The book will be equally valuable to heating contractors doing a general line of work.

Hero Bench Emery Grinder.

Robertson Mfg. Company, 38 Greenwood place, Buffalo, N. Y., have just put out the Hero bench emery grinder No. 20, here shown. It has some of the features of their No. 10 Hero emery grinder, which has already been illustrated in these columns, the No. 10 being a column machine instead of for bench installation. The illustration herewith shows their universal tool carriage and clamp, by the use of which a tool can be ground accurately square or any angle or bevel. By this method it is also claimed that it is much less work to finish sharpening on an oil stone, as the ground surface of the tool will be slightly concaved, thus allowing the fine edge to come in contact with the oil stone without working the whole surface down on the stone to get a fine edge. Each machine has one best make emery wheel, 6 x ¾ inches, and an extra holder for skate and cutlery grinding. By reversing the tool rest it is in position for grinding cold chisels, drills, machine parts, &c. The machine can be carried in the tool chest furnished with a special clamp with screw holes in frame to fasten to the bench with the necessary wrenches to fit nuts, &c. A foot power connection is also made, and can be applied at any time. The shaft is of steel, ⅝ inch in diameter, the bearing in the head being milled from the solid to a fine bearing. The machine is geared 19 to 1, and has a special mechanism arranged in the intermediate gear which allows the workman to cease turning the crank at any time while the wheel will still continue to run. The machine is compact and complete weighs 14 pounds.



Hero Bench Emery Grinder No. 20.

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The Industries of Pennsylvania.

According to a report of the Census Bureau over $1,500,000,000 is invested in manufactures and mechanical industries in Pennsylvania. The report shows that in 1900 there were 52,185 manufacturing establishments in the State, with an aggregate capital of $1,551,548,712. This sum represents the value of land, buildings, machinery, tools and implements and the live capital utilized, but does not include the capital stock of any of the manufacturing corporations of the State. The value of the products is returned at $1,834,790,860.

There has been a large growth in the manufacturing and mechanical industries of Pennsylvania during the half century. The population during these years increased from 2,311,786 to 6,302,034, while the average number of wage earners employed in manufacturing establishments increased from 146,766 to 733,834.

In 1840 and in 1850 Pennsylvania ranked third in the United States in manufacturing and mechanical industries, but at all succeeding censuses its rank has been second. In the amount of power used in manufacturing —an index of the factory system proper—Pennsylvania has ranked first since 1870, using in that year 15.5 per cent. of the total power used in the United States and 16.4 per cent. in 1900.

The report says that few States have been so favored as Pennsylvania in natural resources. The raw materials for many kinds of manufactures are abundant, the State ranking high in the production of lumber, cereals, crude petroleum and iron ore. It not only has fuel sufficient for its extensive manufactures, but ships an immense surplus each year to other States.

The annual coal production of Pennsylvania between the years 1880 and 1890 was each year more than one-half of the total for the United States. Natural gas has been used in the State for manufacturing purposes since 1874. This fuel has been used in the manufacture of glass, the puddling of iron, the heating of large furnaces in the manufacture of steel, and the roasting of ores.

The manufacture of iron and steel is the most important industry in the State. The 291 establishments reported in 1900 gave employment to 110,864 wage earners, and the products were valued at $434,445,200. In 1880 the value of its iron and steel products amounted to 49.1 per cent. of the total for the United States and in 1900 to 54 per cent.

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Water the Future Motive Power.

In a newspaper interview with Lord Kelvin the other day the great British scientist is credited with the following prediction as to the future of Niagara Falls:

I regard Niagara Falls as the greatest problem in America for scientists to solve. The time is coming when coal and oil will be too scarce and too expensive to be used for the manufacture of power. There is at Niagara Falls an inexhaustible supply of power that in 50 or 100 years is bound to be utilized to its fullest extent. I predict the time will come when the water will no longer flow over the great Horseshoe Falls, but the same water will find its way down the river through countless turbines, spreading light and power for the use of millions of people in all sections of the country. This world must depend on its water for power in the future. The supply of coal will soon become so exhausted that it cannot be profitably used for manufacturing purposes. America has millions upon millions of horse power in connection with her rivers that are utterly neglected. This power is bound to be developed in the near future. The start that has been made at Niagara Falls is only the beginning of a new era in the manufacture and transmission of power.

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The wire workers in 22 Brooklyn factories went on strike on Monday owing to the refusal of the employers to grant their demand for a working day of eight hours in place of the ten-hour day now customary, with the same wages.

THE LETTER BOX.

Inquiries in regard to practical questions of general interest are invited, in reply to which we shall be glad to receive suggestions and information from our readers.

Correspondents are requested in all cases to give their names and addresses, which will not, however, be published or disclosed without their consent.

HEATING AND VENTILATING QUESTIONS.

From C. K., New York City.—Will you kindly help out an old reader of *The Metal Worker* on some problems which confront him for which he has no data or formula to figure out? The building in question is heated by a low pressure steam system, using direct and direct-indirect radiators. The rooms shown in the sketches are heated by means of direct-indirect radiators. The flue for ventilation, shown in Fig. 1, starts from the second floor and runs up to the roof, discharging the air that passes through it to the outer atmosphere. A portion of the second floor, shown in Fig. 2, which is used as a church room, or auditorium, has a capacity of 51,800 cubic feet. The room on the third floor, shown in Fig. 3, is used for a sick room, or hospital, and has a capacity of 31,700 cubic feet. The room on the fourth floor, shown in Fig. 4, is used for a dining room and has a capacity of 8640 cubic feet. The ventilating shaft is 18 inches deep, 8 feet wide and 61 feet high. I desire to know what sized radiators to use in the different rooms, as we wish to put two in the room on the second floor, two in the room on the third floor and one in the room on the fourth floor. Also let me know how many feet of surface should be exposed in the radiators or coils (if coils would answer for the third floor) to move the air in the room properly. I should also like to know where to put the registers—at the top or the bottom of the room? I should be glad to learn some way to make the calculations for such cases.

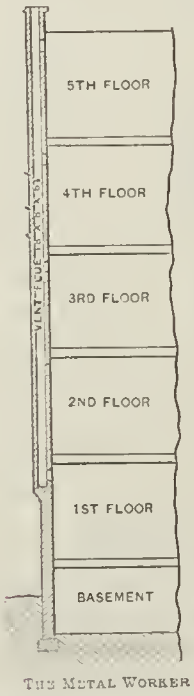


Fig. 1.—The Ventilating Flue.

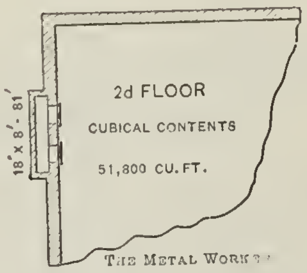


Fig. 2.—Portion of Second Floor.

Heating and Ventilating Questions.

Answer.—The number of occupants not being stated, it may be assumed that a change of air four times an hour will be satisfactory. At any rate, the volume corresponding to this air change will probably exceed that admitted through the direct-indirect radiators. A 15-minute air change in the second-floor room of 51,800 cubic feet corresponds to 3453 cubic feet per minute, in the third-floor room of 31-700 cubic feet corresponds to 2113 cubic feet per minute, and in the fourth-floor room of 8640 cubic feet to 576 cubic feet per minute. Assume a velocity of 300 feet per minute through the vent registers. This gives the net area for second floor, 3453 ÷ 300 = 11.51 square feet; for third floor, 2113 ÷ 300 = 7.04 square feet; for fourth floor 576 ÷ 300 = 1.92 square feet.

Two registers are to be used on the second floor, equal to about 5.76 square feet net area each. Use two 30 x 36 inch vent registers, the net area of each being 864 square inches. On the third floor the two registers will each be 3.52 square feet in area. Use two 24 x 30 inch registers, having a net area of 480 square inches each. On the fourth floor use an 18 x 24 inch register having a net area of 288 square inches.

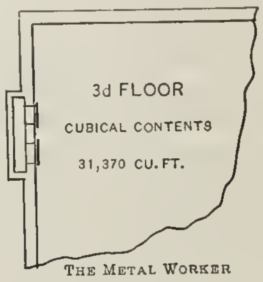


Fig. 3.—Third Floor.

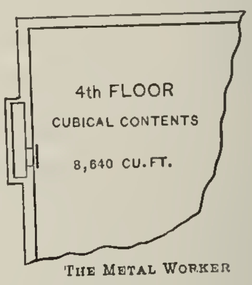


Fig. 4.—Fourth Floor.

If the aspirating coils are placed on the third floor the hight of the heated flue will be reduced to, say, 50 feet. The flue is 18 inches by 8 feet, or 12 square feet area. The volume of air to be moved is 3453 + 2113 + 576 = 6142 cubic feet per minute; 6142 ÷ 12 = 512 feet velocity. This is a pretty high velocity in a flue of the hight stated, with natural draft—*i. e.*, without a fan.

To secure this velocity the excess of temperature in the flue over that of outdoors must be about 40 degrees. This will occur naturally up to freezing outside. Above that the flue must be heated.

With natural or gravity systems it is hardly expected to maintain the same outflow of air in mild weather as in cold, as that would necessitate very large flues and aspirating coils. An excess of 20 degrees would give a velocity of about 350 feet, corresponding to an air change once in 20 odd minutes. To heat the air even this amount, when the outside air approaches 70 degrees, would require a very large coil.

In school house work it is common practice to use about 20 square feet of coil to handle 1500 cubic feet of air per minute. On this basis an 80 square foot coil would be necessary to handle 6142 cubic feet per minute. The coil could be figured out on a heat unit basis, but it is hardly necessary to go into that here.

Of course the nearer the base of the flue above the vent openings the coils are placed the more effective will they be. Aspirating coils placed, as they not uncommonly are, near the top of the flue are of relatively slight effect. The registers should be placed near the floor, otherwise the warm, fresh air admitted through the radiator would not be drawn down to the breathing line from the ceiling, where it first goes on entering the room.

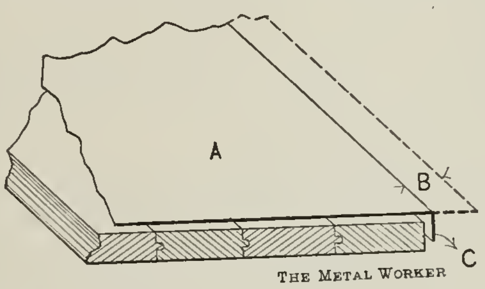
CAN RUSTY CANS BE SOLDERED?

From T. H., Albany, N. Y.—In regard to the inquiry of "M. J. S. & Co.," Houston, Texas, in reference to soldering rusty cans, I would say clean off the parts as well as can readily be done, with sandpaper preferably. After this take a swab and with diluted sulphuric acid rub the parts, or leave it on until clean. The rubbing will be the quickest way. Wash the can with clean water, after which it can be easily soldered with cut muriatic acid, prepared in the usual way, by the addition of as much zinc to the acid as it will dissolve.

From A. C., Savannah, Ga.—Having seen the inquiry of "M. J. S. & Co." in *The Metal Worker* of May 3, I would say that perseverance and elbow grease can be used to best accomplish the result he desires. Solder does not readily adhere to rusty iron, consequently the rust must be removed. For this purpose old files may be heated, forged and bent to various shapes that will be most convenient and then sharpened, when they will make effective scrapers to scratch off the rust and scrape the iron bright. It must then be soldered with cut acid and a hot soldering copper. Whoever undertakes this job will find more work than pleasure in it, and, in consequence, must not expect to accomplish too much in a given time. I point this out for the benefit of the man who looks after the financial end. He must add a substantial percentage to what he might consider a fair price for such work, to make up for the loss of time that will result with the most conscientious workman when engaged on such a disagreeable task.

BEADING GUTTERS.

From C. A. S., Mankato, Minn.—Some time ago I purchased one of your books on "Roofing, Cornice and Skylight Work," in which is explained all about making gutters, &c., on a brake. A bead appears in the illustration, but, as there is no beader shown, will you kindly explain how this bead is made; also how I could make a beader 8 feet long with ½, ⅞ and 1 inch rods?



Beading Gutters.—Fig. 1.—Bending the Sheet.

Answer.—We would advise our correspondent to purchase a beading machine for making the different sized beads 8 feet in length. The prices of these tools are very reasonable, and we doubt if one can be constructed by him which would turn out true, straight beads. However, in many shops no beader is employed, but the beads are made by hand, a method so common that no mention was made of it in the "Roofing, Cornice and Skylight Manual." In the accompanying illustrations are shown the four operations employed for beading gutters:

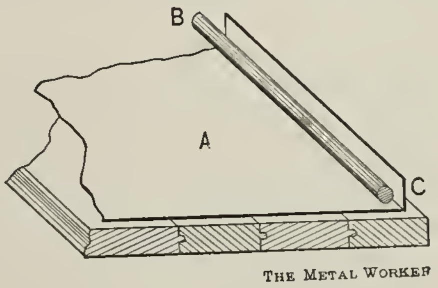


Fig. 2.—The Position on the Bench.

In Fig. 1, A shows the sheet of metal on the bench projecting over the edge of the bench as far as B (the amount of material required to incase the bead). It is then turned down with the mallet, as indicated at C. This first operation could be avoided by making a bend in the brake as shown at C. The second operation is indicated in Fig. 2, where the sheet A is laid upon the bench with the edge C turning upward. Now take the required size rod or gas pipe, place it as shown at B, and using the mallet turn the metal C over the rod, when it will look as shown at A in Fig 3. Then, holding the sheet in the position there shown, turn the metal tightly around the rod B, as shown in diagram C, using the sharp edge of the hammer D, being careful not to make any dents on the sheet A. When this operation is completed the rod is tightly incased.

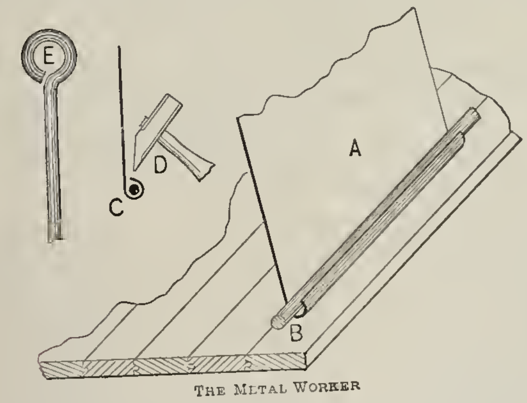


Fig. 3.—Bending the Sheet.

To remove the rod so that the other sheets can be beaded, lay the sheet A flat upon the bench and tap lightly along the bead with the mallet, when the rod can easily be drawn out. In shop use the rods have a ring at one end, as at E, from which they hang against the wall. This is also used to draw the rod out of the sheet after it is beaded.

JOB BELONGS TO SHEET METAL WORKERS.

From F. T. P., Dallas, Texas.—There is quite a discussion in our city between the carpenters, tinsmiths, contracting carpenters and contracting sheet metal working concerns as to which trade belongs the work of putting up stamped steel ceilings, stamped imitation brick and rock face siding, underpinning, corrugated and V-crimped iron, &c. The carpenters claim that it is customary all over the country for them to put this material in place, and that it belongs to their trade, while the sheet metal workers claim that it does not belong to the carpenters' trade, but to the sheet metal workers' trade. We shall be glad if *The Metal Worker* will give its views as to whom this class of work belongs, and also hope the trade in different sections will express their views on the subject, for we would like to have this matter settled between the different trades unions.

Note.—We hope that our readers will freely express their views on this subject. There can be no doubt that so far as the fitting of the sheet metal is concerned, the tinsmiths are far better qualified to do the work than the carpenter, and it is naturally a branch of their work. Unfortunately, the tinsmiths have not given the amount of attention to the introduction and use of the materials mentioned that would have prevented the present question from arising. The result is that in many sections contracting carpenters buy and put in place much of these materials. We are inclined to think, however, that this is a special branch, and it has been so treated by some architects and builders. It has been taken up in some cities by men who make a specialty of store decorations and furnishings. This is particularly noticeable in parts of New England. In the larger cities the outside work is naturally done by journeymen tinsmiths and sheet metal workers, and we think that throughout the country they handle by far the greater proportion of this class of material. So far as the inside work is concerned specialists now do a good share, if not the larger proportion, of the interior decoration of buildings with ceiling and side wall patterns in stamped steel. Carpenters and handy men doubtless do some of it, and the sheet metal worker a fair proportion. The popularity of this character of interior decoration is evidence that the period of introduction has passed, and if the sheet metal workers expect to derive benefit from the sale of the material and putting it in place, it will be necessary for them to take hold of this branch of the trade with energetic enterprise.

ADDRESS WANTED.

If "A. T.," who sends us an inquiry about the strength of galvanized iron, will furnish us with his full name and address, as requested at the head of this department, we shall be pleased to call attention to his request.

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A consolidation of the Star Aluminum Company of Doylestown, Ohio, and the Bay State Aluminum Company of Massachusetts has been effected by W. C. Spencer of Akron, vice-president of the Star Company. It is stated that the Bay State plant will be removed to Doylestown and the line of products of the two concerns will be enlarged. Heretofore the Doylestown concern have manufactured Combs and the Bay State Company Cooking Utensils.

TRADE REPORT.

MARKET SUMMARY.

Pig Tin is strong and about ½c. higher in price, but quiet.

Copper is quiet but somewhat firmer.

Pig Lead is dull but firm.

Spelter is easy and quiet.

Antimony is unchanged.

Nickel is active and without change.

Aluminum is firm and in good demand.

Tin Plates are quiet, with prices unchanged and firm.

Black Sheets continue in heavy demand, with prices strong.

Galvanized Sheets are not in quite such heavy demand, but are still active and firm.

Old Metals are quiet and weaker, especially Scrap Brass and Copper.

Foundry Iron is still very scarce, with prices high and little doing for lack of supply.

Sheet Copper is in good demand, with prices firm.

Sheet Zinc is without change.

Hardware is moving in good volume and prices remain strong.

Solder is up ½c. a lb.

Screen Doors are in heavy demand, with prices higher in some quarters.

Wire Nails are very active and market is firm.

Cut Nail base prices were reaffirmed for May, some advances being made on smaller sizes.

Roofers' and Slaters' Nails are slightly higher in price.

Window Glass is quiet at recent advance.

White Lead is in good demand at unchanged prices.

Linseed Oil rules quiet and firm.

Spirits Turpentine is dull and unchanged.

Galvanized Range Boilers have been advanced in price from 5 to 10 per cent.

Cast Iron Soil Pipe prices have been reaffirmed.

Plumbers' Brass Goods are 10 per cent. higher.

METAL MARKET.

New York, May 9, 1902.

Pig Tin.—The market has advanced further during the week and prices now stand at the highest point touched since July of last year. Business in the meantime is not heavy, as large consumers are still supplied through old contracts, which were taken when prices were 5c. or 6c. lower than at present. It was the large purchases made a number of weeks ago that occasioned the heavy deliveries during the month of April, which were the largest on record, amounting to 3300 tons. Jobbers' prices are about ½c. higher than a week ago, Straits Pig in small lots being quoted at 30c. to 30½c. per lb. Stocks both here and in London are thoroughly under the control of strong holders, who, it is believed, can easily maintain the high level of prices for some time to come.

Copper.—While the consumptive demand for Copper is still very light, a firmer feeling has been developed in the market, and transactions of several hundred tons are said to have been carried through during the week at higher figures. The market closed steady, Lake Ingots in small lots being quoted at about 13c. to 13½c. per lb. and Casting Copper at 12¾c. per lb.

Sheet Copper.—A continued active demand for Sheet Copper is reported. While consumers are buying mainly for the supply of current needs, the volume of orders reaches a very substantial aggregate and the outlook in this branch of trade is regarded as favorable for an exceptionally large business during the present year. Prices remain firm on the basis of 18c. per lb. for Sheet Copper from store.

Pig Lead.—This metal is without change. The market continues dull and uninteresting, with prices firm at the figures ruling for some time past. American Pig in small lots is quoted at 4.45c. to 4½c. per lb.

Spelter.—The tone of the Spelter market is somewhat easier, but retail quotations are unchanged, good Western brands in small lots ruling at 4.65c. to 4.75c. per pound. Trade is of a light order and the market as a whole quiet and without special points of interest.

Sheet Zinc.—The demand for Sheet Zinc is of fair proportions. Prices are unchanged at 6¾c. per lb. for 600-lb. cask lots and 7c. to 7¼c. for smaller quantities.

Antimony—Is unchanged. Hallett's in small parcels is quoted at 8⅝c. to 8¾c. per lb.; U. S. at 8⅜c. to 8½c., and Cookson's at 10¼c. to 10¾c.

Nickel.—There is no change in the market for this metal. Small lots are quoted at about 55c. per lb.

Aluminum.—The demand continues active, and prices are without change. Small lots of No. 1 Ingot guaranteed 99 per cent. pure are quoted at 37c. per lb., and 100-lb. lots at 35c.

Tin Plates.—The market is absolutely devoid of any feature of interest. While deliveries on former contracts are being made in large volume and are being taken up promptly, but little new business of any size is reported, either for prompt or forward delivery. Orders from the smaller consumers, however, show an increase, caused probably by the setting in of settled weather, which permits the carrying on of outdoor operations. Prices are without change. American Bessemer Coke Plates, IC, 14 x 20, are quoted at $4.85 to $4.95 per box for moderate sized lots delivered at New York or corresponding points.

Sheets.—The market for Sheets continues very strong, and the demand is heavy, especially for Black Sheets. Galvanized Sheets, while active, are not being called for in quite as large a volume as in the past few weeks. Manufacturers are so well filled with orders that they would welcome the opportunity of a lull in the demand to enable them to come abreast of their contracts, and, if possible, to accumulate a little stock, which is sure to be wanted during the summer months. Jobbers' prices remain without change. No. 27 One Pass Cold Rolled Soft Steel Sheets rule at about 3.85c. to 3.90c., and No. 24 Galvanized at 4c. to 4.20c.

Chicago advices are as follows: There have been a few important sales of Sheets, several thousand tons having been sold for delivery during the last half of the year, but the aggregate volume of business has been less, there being less pressure from buyers, but the tone of the market has continued firm. Small lots of No. 27 Black Sheets from store, Chicago, are quoted at 3.45c. to 3.55c. Galvanized Sheets are quoted at net prices, small lots from store ruling at 4.70c. to 4.75c. for No. 27.

Old Metals.—The demand for Scrap is light, and, as stocks are accumulating, prices are inclined to sag. Old Brass and Copper are weak. Dealers are paying about the following rates for moderate sized lots, delivered at New York or corresponding points:

Heavy Copper	per lb.	9¾c.
Light and Tinned Copper	per lb.	8¾c.
Heavy Brass	per lb.	8 c.
Light Brass	per lb.	6¼c.
Lead	per lb.	3⅝c.
Tea Lead	per lb.	3¼c.
Zinc	per lb.	2⅞c.
Pure Aluminum Sheet	per lb.	25 c.
Cast Aluminum	per lb.	20 c.
No. 1 Pewter	per lb.	16 c.
No. 2 Pewter	per lb.	8½c.
Tin Plate Scrap, per gross ton		.... to $5.00
Wrought Iron Scrap, per gross ton		$13.00 to 13.50
Heavy Cast Scrap, per gross ton		12.00 to 12.50
Stove Plate Scrap, per gross ton		8.50 to 9.00
Burnt Iron, per gross ton		7.00 to 7.25

The C. E. Sears Canning Company of Circleville, Ohio, are putting up an addition and installing new machinery which will increase their daily output to 60,000 tin cans. An electric light plant will also be installed.

THE PIG IRON MARKET.

New York.—A feature of the market is that quite a number of founders, particularly in New England, find that their consumption is larger than expected, and are being forced to cover their additional requirements at the market price. We quote, for summer delivery, Northern Iron, at tidewater, No. 1 X, nominal, $21.50 to $22; No. 2 X, $19.50 to $20; No. 2 Plain, $19 to $19.50; Tennessee and Alabama brands are as follows: No. 1 Foundry, $19.50 to $20.50; No. 2 Foundry, $18.75 to $19.25; No. 3 Foundry, $17.75 to $18.25.

Chicago.—The market has been rather wild, prices advancing sharply from 50c. to $1.50 per ton, in a few instances there being a variation of from $1 to $2 per ton in the various grades of both Southern and Northern Iron. Prices have been governed by the urgency of the buyer or the temerity of the seller to demand. The volume of business has been relatively light, as spot Iron is scarce and very few furnaces are in a position to take further orders, even for future delivery. Reports are current that a number of foundries have preferred to shut down rather than pay the present prices. This seems to be rather the exception than the rule, however. Not a few buyers who have orders for Castings on their books suddenly find themselves forced into the market because of the failure of furnaces to make deliveries contracted for. These urgent buyers have been forced to pay the high prices now prevailing. We quote as follows:

Lake Superior Charcoal	$22.50 to $23.25
Local Coke Foundry, No. 1	21.00 to 22.00
Local Coke Foundry, No. 2	20.00 to 21.00
Local Coke Foundry, No. 3	19.50 to 20.50
Local Scotch, No. 1	20.00 to 22.00
Ohio Strong Softeners, No. 1	23.10 to 23.35
Southern Silvery, according to Silicon	20.40 to 20.90
Southern Coke, No. 1	19.65 to 20.65
Southern Coke, No. 2	19.15 to 20.15
Southern Coke, No. 3	18.65 to 19.15
Southern Coke, No. 1 Soft	19.90 to 20.65
Southern Coke, No. 2 Soft	19.15 to 19.90

Philadelphia.—Opinions are a little divided in regard to the exact status of the market. Furnaces appear to be doing better than for some months past, and deliveries on old contracts have been a trifle better. New business, however, is hard to place, unless by paying extremely full figures. The market may be said at the present time to be taking a breathing spell. There is nothing to indicate weakness, but there is evidently a desire to take new soundings before making further commitments. Sales during the week have been on a basis of $19.75 to $20.50 for No. 2 X Foundry. For strictly May and June deliveries 50c. to 75c. more would have to be paid, but the range is about as follows for Philadelphia and nearby deliveries, covering the last four months of the year:

No. 1 X Foundry	$20.50 to $21.50
No. 2 X Foundry	19.75 to 20.50
No. 2. Plain	19.25 to 19.75

Pittsburgh.—Prices of Pig Iron are steadily going up, and the scarcity of metal is getting worse. Furnaces disclaim the responsibility for the high prices, insisting that it is the buyers who are putting the market up. No. 2 Foundry Iron is sold at $21 at Valley furnaces. We quote Bessemer at $20 to $21, at furnace, but it is doubtful whether any Iron could be had at the lower figure. The current rate for No. 2 Foundry, f.o.b. Pittsburgh, is $21.25 to $21.75.

Cincinnati.—The general situation in Pig Iron, especially Southern Iron, seems to be absolutely unchanged from what it was a week ago. The amount of Iron selling in this territory at present is very small, and there is quite an anxious inquiry for all sorts of Foundry Iron for immediate delivery. Immediate delivery Iron, however, is not to be had. As to the value of Southern Iron, quotations can only be arrived at from the small amounts that are being sold, and these are going on the basis of $15 to $15.75, Birmingham, for No. 2 Foundry. Under the circumstances the situation is strong, with the outlook favoring an increase in prices rather than a decline. We quote f.o.b. Cincinnati, as follows:

Southern Coke, No. 1	$18.25 to $19.00
Southern Coke, No. 2	17.75 to 18.50
Southern Coke, No. 3	17.25 to 18.00
Southern Coke, No. 4	16.75 to 17.50
Southern Coke, No. 1 Soft	18.25 to 19.00
Southern Coke, No. 2 Soft	17.75 to 18.00
Southern Coke, Gray Forge	16.75 to 17.50
Southern Coke, Mottled	16.75 to 17.50
Ohio Silvery, No. 1	21.35 to 21.85
Ohio Silvery, No. 2	20.85 to 21.35
Lake Superior Coke, No. 1	21.85 to 22.35
Lake Superior Coke, No. 2	20.85 to 21.35
Lake Superior Coke, No. 3	19.85 to 20.35

CHICAGO REPORT.

Scrap Iron and Steel.—The market has improved in tone, there being an increased demand for consumption by larger melters of Iron, but offerings from the country continue ample, and with the exception of Cast Borings, which are again higher, dealers make no change in quotations. We quote dealers' buying prices for carload lots, Chicago delivery, as follows:

	Per net ton.
Country Wrought Scrap	$14.00 to $14.50
Machinery Cast	.... to 13.00
Malleable Cast	12.00 to 12.50
Stove Plate (free from burnt)	10.00 to 10.50
Burnt Iron and Grate Bars	8.00 to 9.00
Sheet Iron and Hoops	8.00 to 9.00
Plow Steel	12.00 to 13.00
Breaking Stock	.... to 11.00
Old Boilers—whole (Iron)	9.50 to 10.00
Old Boilers (Iron) cut in single Sheets and Rings	12.00 to 12.50
Old Gas Pipe and Boiler Tubes	12.00 to 12.50
Cast Borings	8.50 to 9.00
Turnings	11.50 to 12.00
Horseshoes	14.00 to 14.50

Old Metals.—Further weakness has been developed in the market for both Copper and Brass, and lower prices have ruled for Copper Wire, Copper Bottoms and Red Brass Borings. Other articles remain steady as previously quoted:

	Per lb.
Copper Wire and Heavy	10½c.
Copper Bottoms	9⅝c.
Copper Clips	10½c.
Red Brass	11 c.
Yellow Brass	8¼c.
Red Brass Borings	9¾c.
Yellow Brass Borings	7¼c.
Light Brass	6½c.
Pipe Lead	3.70c.
Tea Lead	3.35c.
Zinc	3 c.
Tin Foil	21 c.
Pewter, No. 1	17½c.
Pewter, No. 2	10 c.
Aluminum	20 c.

Old Rubber.—There is a fair movement and a steady market with fair offerings of all kinds of Old Rubber. Prices remain without essential change:

	Per net ton.	Per lb.
Garden Hose	$25.00	.....
Air Brake Hose	42.00	.....
Rubber Shoes	....	6.85c.
Rubber Car Springs	....	5 c.
Inside Bicycle Tubing	....	22 c.
Outside Tubing	....	6 c.
Black Rubber	....	4 c.
White Rubber	....	8¼c.

Rags.—Offerings have continued liberal. but with a fair demand the market has remained steady. Rags, Chicago delivery. 70c. to 75c. per 100 lbs. in any quantity.

Anthracite Coal.—There is an active demand and a firm tone prevails. The following schedule of prices is in force for all shipments in the month of May subject to a discount of 40c.; on June 1 another advance of 10c. per ton will be in force by the reduction of the discount to 30c.:

	Grate.	Egg and Stove.
Chicago	$5.75	$6.00
Milwaukee, Wis.	5.75	6.00
St. Louis	6.20	6.45
Kansas City, Mo	8.25	8.50

Work on the new plant which the Pittsburgh Reduction Company are erecting near East St. Louis, Ill., is well under way. The buildings will cover 6 acres, and will be similar to those of the company at New Kensington, Pa. It is understood that as soon as the buildings have been completed eight calcining furnaces, now at New Kensington, will be removed to the new works.

The Kuenzel Non-Asphyxiating Non-Explosive Crude Oil Gas Producing & Heating Company, with principal office at 260 Eleventh street, Hoboken, N. J., have been incorporated with a capital of $2,000,000. The incorporators are G. W. Draesel, M.D., Isaac Ingleson, Wm. Graafmeyer, John Schmidt, Herman W. Schmidt, Aug. Melching, Henry E. Graafmeyer, Henry Mehte, Chas. and A. Kuenzel, Jr.

THE HARDWARE TRADE.

The difficulty in obtaining goods, especially season goods, is a marked feature of the trade at the present time. An unusual number of lines are in scant supply. This condition characterizes not only spring and summer goods, but many other lines such as Builders' Hardware and many kinds of heavy Hardware which feel immediately the effect of the difficulty in obtaining raw material. While in certain ways the trade is not so active as it was, this is regarded as owing principally to the fact that stock orders were placed some time ago, and with the liberality which characterized the buying were of sufficient size to cover the season's requirements. The jobbers unanimously report a large volume of business. Prices are steady and have something of an upward tendency. The changes, however, the past week have been few. Of most general interest is a change in the Cut Nail card, which, though not involving an important advance, will entail some labor on merchants who have become accustomed to the old one. The amount of building throughout the country is large, and all the indications point to a very satisfactory trade in this line so far as volume is concerned. The close prices at which it is done and the lack of harmony between the manufacturers, jobbers and retailers in the marketing of this line tend to make the business annoying and unsatisfactory. Export trade is rather quiet for several reasons, a marked factor being the great home demand and resultant higher prices.

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NOTES ON PRICES.

Galvanized Range Boilers.—The manufacturers of Galvanized Kitchen Range Boilers held a meeting in New York City on May 1 and advanced prices on the entire line, ranging from 5 to 10 per cent., according to the manner in which the raw product has been affected by the recent changes in the Iron market. It was said after the meeting that another advance of a substantial kind would take place at a meeting to be held in July. The business of the association was never in better shape. The demand for their products is much greater this season than it has ever been before, and there is no likelihood of any drop in prices from this time to the end of the year. Following are the new discounts:

30-gallon Standard Boilers	72½ %
35 and 40 gallon Standard Boilers	70 %
Other sizes up to and including 52 gallons	65 %
Other sizes above 52 gallons up to and including 192 gallons	55 and 5 %
Extra Heavy Boilers, up to and including 52 gallons	60 and 5 %
Sizes above 52 gallons	50 and 5 %
Expansion Tanks	55 and 5 %
Brazier Tanks	55 and 5 %

Air Tanks, same as Standard Boilers.
Horizontal Tanks, same as Standard Boilers.

Cast Iron Soil Pipe.—A meeting of the manufacturers of Cast Iron Soil Pipe was held in New York City last week, and although the price of Pig Iron has been advancing steadily for some time, the manufacturers decided that no change should be made in the price of their product to the jobbing trade at this time. It seems that considerable work is still unplaced by the contractors and builders. The reason they are holding up this business is that they do not care to start new work without knowing the decision of the workingmen regarding wages and the number of hours' work per week they were willing to adopt for the coming season. Owing to this state of affairs, the manufacturers of Cast Iron Soil Pipe thought it would be unwise to advance their product, as it might tend to discourage the builders and contractors.

Brass Goods.—The manufacturers of Brass Goods have adopted the recommendations made at their last meeting, which was held in New York City, and have put the 10 per cent. advance then recommended into effect. The price on Flange and Thimble Work has been considerably advanced, but there are so many concerns outside of the association who are manufacturing these lines that it is generally believed to be impossible for the association members to maintain the prices which they are seeking.

S. M. Howes & Co., Boston, Mass., announce in a circular to the trade that for a limited period they are quoting as follows on their Boston Furnace Fittings, Stove Pipe, Elbows, &c.:

	Discount.
Boston Stove Pipe and Elbows	50 %
Yankee Dampers	50 and 10 %
Boston Furnace Fittings	30 %
Reed's Pokers	30 %
Globe Ventilators	60 and 10 %
Rotary Ventilators, 6 to 12 inches	50 %
Rotary Ventilators, 12 to 30 inches	30 %

Screen Doors.—The manufacturers of Screen Doors report a large demand for the current season. This fact, together with the increased cost of lumber, gives the market a strong tone, and some of the manufacturers at least have recently been announcing higher prices.

Solder.—The advance in Pig Tin has been followed by higher prices for Solder. Jobbers are now asking 19 to 19½ cents per pound for Half and Half, guaranteed, in small lots, and 16½ to 18 cents for No. 1 Solder.

Elbow and Skylight Patterns.—Gray's Perfect Elbow and Skylight Patterns, issued by G. L. Gray, 840 North Cedar street, Galesburg, Ill., are meeting with favor, but in order to increase their popularity and sale the publisher has decided to adopt a lower range of prices. The advertisement on another page of this issue gives full particulars.

Wire Nails.—The current demand for Wire Nails is large. Owing to receipts of recent shipments from mills the stocks in the New York market are better assorted. The tone of the market is firm. Small lots of Wire Nails from store are quoted at $2.30 per keg.

Cut Nails.—The Cut Nail Association, which held their meeting last week, made no change in the base price for May, but reaffirmed that existing. A new list of extras was adopted at the meeting by which advances were made on some of the smaller sizes, also on the entire line of special Nails, including Roofing and Slating Nails. The revised card on the last named goods is as follows:

Roofing Nails.

	Extra.
1½-inch	$0.30
1⅜ "	.40
1¼ "	.50
1⅛ "	.60
1 "	.70
⅞ "	.85
¾ "	1.00

Slating.

6d	.30
4d and 5d	.40
3d	.60
2d	.80

The demand for Cut Nails in the New York market is firm. All the jobbers are not yet asking the advance in extras on the new card. Small lots of Cut Nails from store are quoted at $2.30 per keg.

Window Glass.—The advance made by the National Window Glass Jobbers' Association, of which announcement was made in our columns last week, resulted in raising the price on the first three brackets of single strength to the same price as other sizes had been quoted. The advance places all Single and Double Strength Glass from store under the uniform discount of 89 per cent. The demand is not very active, but is showing some improvement.

White Lead.—The consumptive demand for White Lead in Oil is reported to be larger than for the corresponding season of last year. Quotations remain on the level of a week ago, White Lead in Oil in retail quantities ruling at 6½ to 6¾ cents per pound.

Linseed Oil.—Manufacturers of Linseed Oil are employed on light contract orders and are not securing new business to any extent. The demand is confined to small lots for present requirements. Quotations continue without change at 67 to 67½ cents per gallon for small lots.

Spirits Turpentine.—The local market is dull and rather weak, in sympathy with lower values in the South. The demand is quite light, small lots of Turpentine being quoted at 46 to 46½ cents per gallon.

Danger in the Bathtub ?

The London *Lancet*, which for many years has been consistently endeavoring to shield humanity from the various ills which threaten it, has recently turned its attention to the bathtub, and comes out with a strong warning against the danger lurking therein. "Too much bathing," says this medical authority, "tends to maceration of the superficial part of the epidermis, which is too frequently removed, and occasions probably too rapid a proliferation of the cells of the Malpighian layer." This warning should come with great force upon the average American or Englishman, who regards his bathtub as one of the great luxuries and even necessities of life, especially in warm weather. It is calculated to make him pause and consider the serious result involved in a "maceration of the superficial part of the epidermis," and also the peril which lies in "the proliferation of the cells of the Malpighian layer." Doubtless this advice will be welcomed by some who, even in the civilized countries referred to, are not slow in availing themselves of an excuse for abstaining from too many ablutions. It is doubtful, however, whether it will produce much effect upon the confirmed and persistent bather here or abroad. At any rate it is not calculated to advance the interests of some of the trades in which our readers are vitally interested. Consequently *The Metal Worker* refrains from indorsing the recommendation of its distinguished London contemporary.

Dover Stamping & Mfg. Company.

A new corporation have been organized under the laws of Maine, to be known as the Dover Stamping & Mfg. Company. They have bought of Josselyn & Co. the old plant formerly owned and run by the Dover Stamping Company, Cambridge, Mass. The new company will be officered as follows: President and general manager of the corporation, Richard L. T. Evans, formerly with the Fairbanks Scale Company; treasurer and manager of the manufacturing department, Edward H. Whitney, son of the founder of the original Dover Stamping Company, which started in Dover, N. H., some 40 years ago, moving to Cambridge in the sixties. The new concern will continue the manufacture of the same line of goods as formerly made by the Dover Stamping Company.

New Aluminum Alloy.

Walter Rubel of Ludwigsburg, Germany, has obtained a patent in the United States on a new alloy, to improve the technological properties of aluminum without increasing its specific gravity. A proportion of 4 to 7 per cent. phosphorus is added to the aluminum, by which, it is claimed, the density and firmness are increased and a tough substance is obtained. An alloy of aluminum with phosphorus containing the above mentioned proportion of the latter gives a sharp defined casting, and only contracts to the extent of 1 to 1½ per cent. at the utmost, and the color is not blue, as is the case with alloys of aluminum and magnesium, but silvery. The alloy does not easily oxidize and can be soldered.

TRADE NOTES.

THOMAS M. MADLEY and others of Fairport, N. Y., are organizing a company with a capital of $50,000, to erect a Brass foundry at Clyde, N. Y.

THE ASTORIA BRASS COMPANY of Astoria, L. I., have been incorporated with a capital of $3000. The directors are George J. Warmbold and Gustave Schroeder of Hoboken, N. J., and Bernhard Schroeder of Fordham, N. Y.

THE AMERICAN NICKEL WORKS, Philadelphia, Pa., have been incorporated with a capital of $5000, by Joseph Wharton, Roger Haydock, J. B. Lippincott and Harrison S. Francis, all of Philadelphia.

W. H. MULLINS of Salem, Ohio, manufacturer of Metal Rowboats and Skiffs, is securing business from all parts of the world. He has recently shipped Boats to St. Petersburg, Russia; Soudan, Egypt; Madras, India, and other foreign points. If desired, these goods are made in sections so that they can be taken apart and stored in a very small space. Catalogues just published describe his various productions.

JEFFERSON METAL WARE COMPANY, Louisville, Ky., have been organized with a capital stock of $20,000. The stockholders are W. T. Hale and J. J. Morris of Louisville, and C. G. Summers of New Albany.

THE C. L. CHAPMAN CREAM SEPARATOR WORKS of Erie, Pa., have been incorporated with a capital of $41,000. The directors are: C. L. Chapman, J. T. Fletcher and E. T. Moore of Erie, and D. McGraw of Little Falls, N. Y.

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ROOFING SUPPLIES, METALS, TIN PLATES, &c.

REVISED MAY 9, 1902

Aluminum—

No. 1 Aluminum (guaranteed over 99% Pure), in ingots for remelting.

Small lots ....⅌ ℔, 37¢
100-℔ lots................................⅌ ℔, 35¢

Aluminum Sheet, B. & S. gauge.
In lots of 50 ℔s or more.

Wider than.. ...... And including	6-in. 14-in ⅌ ℔	14-in. 24-in. ⅌ ℔.	24-in. 30-in. ⅌ ℔.
Nos. 13 to 19..........	$0.42	$0.44	$0.47
" 20....	.44	.46	.49
" 21 to 23	.46	.48	.51
" 24................	.46	.50	.53
" 25................	.47	.51	.54
26................	.47	.54	.59
27................	.48	.57	.62
28................	.48	.57	.64
29...	.49	.60	.69
" 30................	.50	.64	.77

Note.—Lots of less than 50 ℔s 5¢ ⅌ ℔ extra.

Antimony—

Cookson.................⅌ ℔. 10¼@10¾¢
Hallett's ....⅌ ℔, 8⅜@8¾¢
U. S....... ....⅌ ℔ 8⅛@8½¢

Brass, Roll and Sheet...... 30%

Conductors—
Corrugated.

Round or Square.—

Galvanized ½ or more. N'st'd........70&5%
" Not Nested...........70&2½%
" Plain Round, ½ or more, Nested ....70&5%
Galvanized, Plain Round, Not Nested. 70&2½%

Spiral Lock Seam Pipe—

Galvanized............ .... 60@60&10%

Spiral Riveted.

Galvanized 40%
See also *Elbows and Shoes; Eave Trough Miters: Strainers, Conductor.*

Conductor Strainers—

See *Strainers, Conductor*

Copper—

Lake Ingot................ ...13 @13½¢
Casting. ....12¾@13 ¢
Sheet and Bolt..............18¢ ⅌ ℔ basis
Cold Rolled Sheets.........19¢ ⅌ ℔ basis
Cold Rolled and Polished Sheets ...... 20¢ basis
Planished Sheets.................21¢ basis
Bottoms, Pits and Flats....⅌ ℔ 22¢ basis

Eave Trough Galvanized

Territory	L. C. L.
Eastern............................	75&10%
Central................	75&7½%
Southern..........................	70&12½%
S. Western.........................	70&10%

Terms, 2% for cash.

Eave Trough Mitres—

Lap or Slip Joint.....................list, 25%

Elbows—Plain Adjustable—

Eastern List.

Tin.................... ....80%
Galvanized.......... ....30%
Perfect Elbows.... ....40%

Stove Pipe—

Four-Piece

	4	4½	5	5½	6-inch.
No. 1.	$0.80	.85	.90	1.00	1.05 per doz.
No. 2.	.65	.70	.75	.80	.85 "
No. 3.	.60	.63	.65	.70	.80 "

Elbows and Shoes—

Galvanized 60%

Gasoline—

See *Petroleum Products.*

Iron Sheet—*Black.*

	One Pass, C. R. Soft Steel.	R. G. Cleaned.
Nos. 14 to 16....	⅌ ℔. 3.50....	3.55¢
Nos. 18 to 21.....	⅌ ℔. 3.60....	3.65¢
Nos. 22 to 24.....	⅌ ℔. 3.70....	3.75¢
Nos. 25 and 26...	⅌ ℔, 3.80....	3.85¢
No. 27	⅌ ℔, 3.90....	3.95¢
No. 28	⅌ ℔, 4.00....	4.05¢

Russia, Planished, &c.

Genuine Russia, according to assortment.......⅌ ℔ 11@14 ¢
Do. Stained............................ 6@10½¢
Patent Planished. ⅌ ℔ A, 11¢: B, 10¢ net

Galvanized.

Nos. 14 and 16.......⅌ ℔ ...3.45@3.60¢
Nos. 18 and 20. .....⅌ ℔, ...3.70@3.90¢
Nos. 22 and 24.......⅌ ℔, .. 4.00@4.20¢
No. 26...................⅌ ℔, ...4.25@4.50¢
No. 27...................⅌ ℔, ...4.55@4.80¢
No. 28...................⅌ ℔, ...4.85@5.10¢
No. 30...................⅌ ℔, ...5.00@5.30¢
No. 20 and lighter, 36 inches wide, 25¢ higher.

Lead—

American Pig..................4.45@4½¢
Bar........................... ...5@5⅛¢
Pipe.............. ......6 ¢¢ .....20% off
Tin Lined Pipe.........12 ¢¢.....20% off
Block Tin Pipe ...... .35 ¢ .....20% off
Sheet Lead...... ......7¼¢.....20% off
Old Lead in exchange, 3 ¾¢ ⅌ ℔

Mitres Eave Trough—

See *Eave Trough Mitres.*

Nickel—

Per ℔...................................55@60¢

Paints Oils &c.—
Leads—

Lead, American White, in Oil :
Lots of 500 ℔ or over........6¼ @ 6½
Lots less than 500 ℔.........6½ @ 6¾
Lead, White, in oil, 25 ℔ tin pails, add to keg price....... .. @ ⅛
Lead, White, in oil, 12½ ℔ tin pails, add to keg price....... .. @ 1
Lead, White, in oil, 1 to 5 ℔ assorted tins, add to keg price. .. @ 1½
Lead, White, Dry in bbls......5¾ @ 6
Lead, Red, bbls., ½ bbls. and kegs :
Lots 500 ℔ or over........... .. @ 6
Lots less than 500 ℔ .... @ 6½

Oils—

Linseed, City, raw......⅌ gal...67@67½¢
Linseed, City, boiled...........69@69½¢
Linseed State and West'n, raw66@66½¢

Spirits Turpentine—

In Southern bbls...............46 @46½¢
In machine bbls................47 @47½¢

Putty—

In bulk...................................$1.25
In bladders...... .... 2.25
In cans 12 ℔ to 25 ℔.................. 2.25
In cans 1 ℔ to 5 ℔..................... 3.25

Petroleum Products—

In Barrels (Barrel Included)

Stove Gasoline........ ...⅌ gal. 10½@11¢
Kerosene. .... ⅌ gal. 12@13¢

Pipe Drain....... ....40%

Pipe, Spiral—

See *Conductors*

Registers—

List Sept. 2, 1901.

Black Japanned.. ....60&10@60&10&5%
White Japanned ....60&10@60&10&5%
Nickel Plated.............60&10@60&10&5%
Bronze Finishes in Imitation of Gold, Silver, Copper or Bronze..... .... 60&10@60&10&5%
Electroplated in Brass, Bronze or Copper...... ....60&10@60&10&5%
White Porcelain........ ....60%
Solid Brass and Bronze Metal 50%

Roofing Material—

1 Ply Tarred Paper. ⅌ ton.$31.00@32.00
2 Ply Tarred Paper...⅌ roll, 108 sq. ft. 55@60¢
3 Ply Tarred Paper..⅌ roll, 108 sq. ft. 80@85¢
Slater's Felt.........⅌ ton, $35.00@36.00
Roofing Pitch ....⅌ bbl. $3.50

Rosin—

Common and Good—Strained.

Rosin, C. & D.....⅌ bbl.	$1.62½	@	$1.65
Rosin, E. & F.....⅌ bbl.	1.70	@	1.75
Rosin, G. & H ....⅌ bbl.	1.80	@	1.85
Rosin, I. & K.....⅌ bbl.	2.10	@	2.70
Rosin, M. & N.....⅌ bbl.	3.05	@	3.55

Shoes and Elbows—

See *Elbows and Shoes.*

Slate Roofing—

f. o. b. cars, Quarry Station.

	According to size.
Pennsylvania:	
Best Bangor, ⅌ sqr.... ...	$3.25@$5.00
No. 1 Bangor Ribbon, ⅌ sq	3.25@ 3.50
Pen Argyle, ⅌ sqr.........	3.25@ 4.00
Peach Bottom, ⅌ sqr......	5.25@ 6.10
No. 1 Chapman, ⅌ sqr	3.50@ 4.35
No. 1 Penna. Black......	$2.75@3.80
Unfading Washington Bangor.......	$2.25@4.25
Vermont:	
Sea Green, ⅌ sqr..........	$2.00@$3.40
Purple, ⅌ sqr............. ..	4.25@ 4.75
Unfading Green, ⅌ sqr...	3.50@ 4.50
Red, ⅌ sqr	6.50@10.50
Maine:	
Brownville, Unfading Black. No. 1	$5.00@7.20

Solder—

½&½ guaranteed...............19 @19½¢
No. 1.................... ... ...16½@18 ¢
Prices of Solder indicated by private brands vary according to composition

Soldering Fluids—

	Per Pound. Barrels	Per Pound. Smaller Q'ntities
Concentrated Flux..........	4c	5c
Eureka Flux :		
Triple Strength...	3c	3½c
Extra Concentrated.......	4½c	5c
Crystal..................... ..		7c
Gedney's Fluid...............	2c	2c
Lennox Fluid..................	2c	3c
Perfection Flux..............	3c	3½@4c
Yager's Salts, 1 lb. bottles.......each, 60¢		
5 lb. bottles, per lb., 45¢		

Soldering Coppers—

Per ℔................................ 20@22¢

Spelter—

Western Spelter.. ....4.65@4.75¢

Spiral Pipe—

See *Conductors.*

Stove Pipe Elbows—

See *Elbows, Stove Pipe.*

Stove Trucks—

See *Trucks, Stove.*

Strainers, Conductor—

Galvanized...... . .. .50%

Tin Pigs and Bars—

Banca, pigs, ⅌ ℔...... ....30 @30½¢
Straits, pigs, ⅌ ℔............... 30 @30½¢
Straits, in bars, ⅌ ℔..... .....31 @31½¢

Tin Plates, American
Charcoal Plates, Bright—

N. B.—The price of 20 x 28 sizes double the price of 14 x 20.

Calland Grade:		
IC,	14 x 20..............	$7.50
IX,	14 x 20....	9.00
IXX,	14 x 20..................	10.25
IXXX,	14 x 20..............	11.50
IXXXX.	14 x 20..................	12.75
Melyn Grade:		
IC,	14 x 20....	7.00
IX,	14 x 20.........	8.50
IXX,	14 x 20.	9.75
IXXX.	14 x 20	11.00
IXXXX	14 x 20....	12.25
Allaway Grade:		
IC,	14 x 20.............	6.50
IX,	14 x 20	7.60
IXX,	14 x 20............	8.70
IXXX,	14 x 20................	9.80
IXXXX.	14 x 20.	10.90

Coke Plates, Bright—

Bessemer Steel, or equal to J. B. Grade, full weight } IC, 14 x 20.........$4.90@5.00
" " IX, 14 x 20.............$6.00

N. B.—The reduction per box on lighter Plates than IC, 14 x 20, is as follows :

100 ℔..................................15¢
95 ℔....................................20¢
90 ℔....................................25¢
85 ℔....... ....30¢

Terne Plates—

N. B.—The following prices are for IC 20 x 28, the rate for 14 x 20 being half as much. IX is usually held at $2 per box advance for 8 to 10 ℔ coating and $2.50 to $3 advance for 15 ℔ and upward.

About 40 ℔ coating.. ..... $16.00@16.50
About 30 ℔ coating........ 15.25@15.75
About 20 ℔ coating........ 13.25@13.75
About 15 ℔ coating........ 11.25@11.75
About 8 ℔ coating......... ......@10.00

Boiler Plates, American—

IXX, 14 x 26..(112 sheets)....... . $12.50
IXX, 14 x 28..(112 sheets)........... 13.50
IXX, 14 x 31..(112 sheets)........... 15.00

Troughs Eave—

See *Eave Trough.*

Trucks, Stove—

Improved Lock Frame, per doz...$15.00
Steel Lock Frame, per doz......... 18.00
Daisy Improved pattern, ⅌ doz .. 18.00

Tubes and Tubing—

Brazed Brass, List June 6, 1898 ......40%
Copper and Bronze, 3c per lb. list more than Brass.
Seamless Brass Tubes, net list Feb. 6, 1899
Tin..50%
Galvanized...............................50%
Fittings for do..........................40%

Zinc—

600 ℔ casks ⅌ ℔........... ....6¾¢
Per ℔....................................7¼¢

PLUMBERS' AND STEAM FITTERS' SUPPLIES.

Boilers, Galvanized—

Standard Boilers :
30 gal....................................72½%
35 and 40 gal 70%
Other sizes up to 52 gal...............65%
52 gal. and above ....55&5%
Extra Heavy Boilers :
18 to 52 gal 60%
53 gal. and above .... 50&5%

Brass Work, Plumbers'—

List of December 7, 1896

Compression
Basin Cocks 65%
Bath Cocks and Double Bath Cocks.. 65%
Bibs. 65%
Bibs, Flanged...........................65%
Fuller:
Bibs...... ....70%
Basin Cocks Nos. 1 to 4...... . ...70%
Bath Cocks, No. 4½......$2.40 each net
Ground Key Work:
Finished Bibs.......... ....55&5%
Rough Bibs............................ 70%
Rough Stop and Stop and Waste Cocks........................70@70&5%
Rough Stop and Stop and Waste Cocks, Patented...... ..... 65@65&5%

Miscellaneous—

Basin Clamps........................60@65%
Basin Plugs...........................60@65%
Chain Stays. . ...60&5@70%
Iron Boiler Couplings:

	Lead Pipe.	Iron Pipe.
Plain Face..⅌ set	$0.95	$1.05
Ground Face ⅌ set	$1.00	$1.10

Sink or Bath and Wash Tray Plugs.60@65%
Soldering Nipples ....70&5@75%
Soldering Unions ....70&5@75%
Union Elbows, Hot Water Heating.... 75@75&15%

Cocks, Valves, &c.—
Cocks—
Brass—

Air and Radiator Air ....75@75&5%
Gas Meter and Union Meter......65@70%
Steam....... ....65@70%

Iron—

All Iron.........................70@70&10%
Iron with Brass Plugs...........65@70%

Valves—
Brass—

Check.......................... ...65@70%
Garden Hose...... ....65&10@70%
Gate......................... 65@65&10%
Globe and Angle, hose outlet.65@65&10%
Globe, Angle and Cross.. .65&10@70&5%
Horizontal, Vertical and Angle Check... 65@65&10%
Hot Water Radiator 75%
Radiator..........................70&10%
Safety....................................65%
Safety, Low Pressure................65%
Jenkins' Disc:
Check... ....65%
Gate.......... ....65%
Globe, Angle and Cross.............70%
Radiator...... ....80%
Radiator, Corner. 75%
Safety.....................................65%

Iron—

Iron Body......................70@70&5%
Foot.............................. ..65@70%
Jenkins Bros.':
All Iron, except Gate.............40&5%
All Iron Gate......... ....35@40%
Iron Body, except Gate..............60%
Iron Body Gate........ .....50@50&5%
Swing Check........... ....50%

Earthenware—

Brown Glazed Wash Tubs...... ....20%
Brown Glazed Sinks, Kitchen and Pantry 20%
Basins, Urinals and Hoppers.........45%
Closet Bowls, Sundries, Washouts and Pedestals........... ... .50%

Fittings—
Brass Fittings—

Finished...............................70@75%
Rough ....70@75%
Bushings.................................70@75%
Nipples ....70@70&2½%
Unions, Rough and Finished....70@70&5%

Iron—

Cast Iron Fittings, Black and Galvanized, Standard sizes...........65@70%
Cast Iron Bushings and Plugs.... 65@70%
Cast Iron Flanges................. 65@70%
Cast Iron Floor Flanges ....65@70%
Malleable Iron Fittings (from ℔ list).50%
" " Bushings.......... 65@70%
" " Unions..... . .....65@70%
" " Unions, Flange 60&10@70%
" " Pipe Hangers, Universal 50%
Wrought Iron Nipples............65@70%
" " Couplings... ....60@65%
" " Long Screws .... .60@65%

Lavatories—

Porcelain Enameled Iron.......30@30&10%

Oakum—

Plumbers' Oakum, 50 lb. bales, ⅌ ℔ 2½¢

Pipe—
Brass, Iron Pipe Size—

⅛	¼	½	¾ to 3 Inch
$0.38	.31	.29	.23 ⅌ ℔

Cast Iron Soil—

List Feb. 25, 1901.
2 to 6 inch inclusive.

Standard.................................. 50&5%
Extra Heavy.................. ....60&7½%
All Fittings.................. ....65&10%

7 to 15 inch.

Pipe and Fittings, Standard and Extra Heavy........ ....50%

Wrought Iron—

List Feb. 15, 1900.

	Black.	Galv
⅛ to ½ inch................	55%	41%
¾ to 12 inch................	65%	50%

Radiators—

Standard List.

Steam....................................50&2½%
Hot Water.. ....50%

Sinks, Etc.— Cast Iron—

	Black	Galv
Sinks, Square, Half Round and Corner...	60@65%	60@65%
Sink Legs.	60%	60@65%
Sink Backs	60%	60@65%
Boiler Stands, Cast Iron........50@10@60%		
Cesspools, Cast Iron....................50%		

Wrought Steel Sinks—

New Era, Galv'd and Enameled. .. 70&5%
New Era, Painted....................50&10%
L. & G.......................................50%

Traps—

Drawn Lead Traps, List June 3, 1901..... 50&5%

Tubs, Bath—

List April 1, 1902.

Cast Iron Enameled Bath Tubs.
Regular Patterns, Guaranteed......80%
All Special Patterns............ .....15%
Solid Copper, list of Feb. 1, 1899.....40%
Solid Porcelain—Class A, 30%: B, 40%: C, 50%.
Steel Clad Copper Lined, list of Feb. 1, 1899...............................50@55%

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Arcade Mfg. Co................ 24
Armstrong Mfg. Co............ 27
Asheville Mica Co............. 19
Asphalt Ready Roofing Co .. 69
Auld & Conger Co............. 65
Barstow Stove Co.............. 75
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Berger Mfg. Co 70
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Bray, J. & Co., E. Bangor, Pa.
Galt, John & Sons, 253 Broadway, N.Y.
Genuine Bangor Slate Co., Easton, Pa.
Johnson, E. J. & Co., 38 Park Row, N.Y.
O'Halloran & Jacobs, Pittsburgh, Pa.

Sap Spouts.
Millar, C. & Son Co., Utica, N. Y.

Schools and Colleges.
Home Industrial School, Canton, O.

Screens.
Harrington & King Perforating Co., Chicago, Ill.

Screws.
Hubbell, Harvey, Bridgeport, Ct.

Sewer Pipe.
Rutland Fire Clay Co., Rutland, Vt

Shaped Iron and Steel, Galvanized.
Am. Galvanizing Wks., Chicago, Ill.

Shears, Sheet Metal
Heartley Machine Variety Iron & Tool Works, Toledo, O.
McSherry, Chas., Pittsburgh, Pa.
Peck, Stow & Wilcox Co., 27 Murray St., N. Y.

Sheet Metal Machinery.
Bertsch & Co., Cambridge City, Ind.
Bliss, E. W. Co., Brooklyn, N. Y.
Clough, R. M., Tolland, Conn.
Double Truss Cornice Brake Co., Buffalo, N. Y
Gordon, W. J., Phila., Pa.
Heartley Machine Variety Iron & Tool Works, Toledo, O.
Keene, Geo. C. & Co., Cincinnati, O.

SEE ALPHABETICAL INDEX, PAGE 57.

Miner & Peck Mfg. Co., New Haven, Conn.
Niagara Machine & Tool Wks., Buffalo, N. Y.
Ohl, Geo. A. & Co., Newark, N. J.
Peck, Stow & Wilcox Co., 27 Murray St., New York.
Phila. Machine Tool Co., Phila., Pa.
Pocock, O., Cincinnati, O.
Poorman Mfg. Co., Piqua, O.
Robinson, J. M. Mfg. Co. Cincinnati, Ohio.
Stiles & Parker Press Co., Brooklyn, N. Y

Sheets, Aluminum Coated Steel.
Steel & Iron Aluminum Coating Co., Connellsville, Pa.

Sheets, Galvanized.
American Sheet Steel Co., New York.
Bruce & Cook, 186 to 190 Water St., N. Y.
McClure & Co., Pittsburgh, Pa.
Osborn, J. M. & L. A., Cleveland, O
Wood Alan Co., Philadelphia, Pa.

Sheets, Iron and Steel.
American Sheet Steel Co., New York.
Bruce & Cook, 186 to 190 Water St., N. Y.
Coe, Jas. A. & Co., Newark, N. J.
Follansbee Bros. Co., Pittsburgh, Pa.
Gummey, McFarland & Co., Phila., Pa.
Osborn, J. M. & L. A., Cleveland, O.
Wood Co., Alan, Philadelphia, Pa.

Shingles and Tiles, Metallic.
Chattanooga Steel Roofing Co., Chattanooga, Tenn
Cincinnati Stamping Co., Cincinnati, O.
Cortright Metal Roofing Co., Philadelphia, Pa.
Meurer Bros. Co., Brooklyn, N. Y.
Montross Metal Shingle Co., Camden, N. J.

Shot.
Colwell Lead Co., 63 Centre St., N. Y.

Siding. (*See Roofing and Siding.*)

Skylights.
Canton Steel Roofing Co., Canton, O
Chattanooga Steel Roofing Co., Chattanooga, Tenn.
Drouve, G. Co., Bridgeport, Conn
Mullins, W. H., Salem, O.
Shipman, H., Brooklyn, N. Y.

Slaters' Tools.
Galt, Jno. & Sons, 253 Broadway, N. Y.
Salem Nail Co., 279 Pearl St., N. Y.

Snow Guards.
Clason Arch. Metal Works, Providence, R. I

Solder.
Bruce & Cook, 186 to 190 Water St., N Y
Follansbee Bros. Co., Pittsburgh, Pa.
Gummey, McFarland & Co., Phila., Pa.
McClure & Co., Pittsburgh, Pa.
Meurer Bros. Co., Brooklyn, N. Y
Sanborn, J., 217 Water St., N. Y.
Taylor, N. & G. Co., Philadelphia, Pa.

Speaking Tubes and Whistles.
Ostrander, W. R. & Co., 204 Fulton St., N. Y.

Specialties, Sheet Metal.
Vogel, Wm. & Bros., Brooklyn, N. Y.

Statuary, Sheet Copper and Bronze.
Mullins, W. H., Salem, O.

Steam and Gas Fitters' Supplies.
Curtis & Curtis Co., Bridgeport, Conn.
Walworth Mfg. Co., Boston, Mass.

Steam and Water Engineering and Regulating Specialties.
Kieley & Mueller, 7-11 West 13th St., N. Y

Steel Stamps and Stencil Dies.
Schwerdtle Stamp Co., Bridgeport, Ct.

Stove Bands.
Kirk Mfg. Co., Toledo, O

Stove Cement.
Dixon, Jos. Crucible Co., Jersey City, N. J.
Rutland Fire Clay Co., Rutland, Vt.

Stove Linings.
Bridgeport Crucible Co., Bridgeport, Conn.
Hessler, H. E. Co., Syracuse, N. Y.
McLeod & Henry Co., Troy, N. Y.
Marcy Stove Repair Co., 74 Beekman St., N. Y.
Presbrey Stove Lining Co., Taunton, Mass.
Rutland Fire Clay Co., Rutland, Vt.
Valentine, M. D. & Bro. Co., Woodbridge, N. J.
Williams Stove Lining Co., Taunton, Mass

Stove and Metal Polish.
Hoffman, Geo. W., Indianapolis, Ind.
Nickel Plate Stove Polish Co., Chicago, Ill.
Rutland Fire Clay Co., Rutland, Vt.

Stove Patterns.
Cope, G. W., Detroit, Mich.
Gobeille Pattern Co., Cleveland, O.
Milwaukee Pattern Works, Milwaukee, Wis.
Vedder Pattern Works, Troy, N. Y.

Stove Pipe Thimbles.
O. K. Mfg. Co., Buffalo, N. Y.

Stove Repairs.
Clark, Henry N. Co., Boston, Mass.
Heath, C. C. & Co., Phila., Pa.
Howes, S. M. Co., Boston, Mass.
Marcy Stove Repair Co., 74 Beekman St., N. Y.
Metropolis Sheet Metals & Stove Repairing Co., Newark, N. J.
Troy Nickel Works, Troy, N. Y

Stove Trimmings, &c.
Shields, W. H. & Co., Troy, N. Y.
Troy Nickel Works, Troy, N. Y

Stove Trucks.
Arcade Mfg. Co., Freeport, Ill.
Howes, S. M. Co., Boston, Mass.

Stoves and Ranges.
Barstow Stove Co., Providence, R. I.
Beckwith, P. D., Est. of, Dowagiac, Mich.
Bergstrom Bros. & Co., Neenah, Wis.
Boynton Furnace Co., 207 Water Street, New York.
Brand Stove Co Milwaukee, Wis.
Champion Steel Range Co., Cleveland, Ohio.
Cosby, C. H., Richmond, Va,
Dighton Furnace Co., Taunton, Mass.
Enterprise Stove Co., Vincennes, Ind.
Floyd, Wells & Co., Royersford, Pa.
Fuller & Warren Co., Troy, N. Y.
Home Stove Co., Indianapolis, Ind.
Joliet Stove Works, Joliet, Ill.
Magee Furnace Co., Boston, Mass.
Michigan Stove Co., Chicago, Ill.
Pittsburgh Stove & Range Co., Pittsburgh, Pa.
Quincy Fdry. & Novelty Co., Quincy, Ill.
Richmond Stove Co., Norwich, Conn.
Sheppard, Isaac A. & Co., Phila., Pa.
Smith & Anthony Co., Boston, Mass.
Somerset Stove Foundry Co., Somerset, Mass.
Stamford Foundry Co. Stamford, Ct.
Thatcher Furnace Co., 240 Water St., N. Y.
Weir Stove Co., Taunton, Mass
Willard, Wm. G., St. Louis, Mo.

Stoves and Ranges, Gas.
Dighton Furnace Co., Taunton, Mass.
Howes, S. M. Co., Boston, Mass.
Metropolis Sheet Metals & Stove Repairing Co., Newark, N. J.

Stoves and Ranges, Oil, Vapor and Gasoline.
Heath, C. C. & Co., Philadelphia, Pa.

Street Lamps, Gasolene.
Merkel, H., St. Louis, Mo.

Tanks, Steel and Wood.
Edwards, J. H., 59 Park Place, N. Y.

Terne Plates.
American Tin Plate Co., New York.
Taylor, N. & G. Co., Phila., Pa.

Tinners' Tools, Machines and Supplies.
Berger Bros. Co., Phila., Pa.
Bertsch & Co., Cambridge City, Ind.
Bliss, E. W. Co., Brooklyn, N. Y.
Bruce & Cook, 186 to 190 Water St., New York.
Follansbee Bros. Co., Pittsburgh, Pa.
Keene, Geo. C. & Co., Cincinnati, O.
Meurer Bros. Co., Brooklyn, N. Y.
Niagara Machine & Tool Wks., Buffalo, N. Y.
Ohl, Geo. A. & Co., Newark, N. J.
Peck, Stow & Wilcox Co., 27 Murray St., New York.
Stiles & Parker Press Co., Brooklyn N. Y.
Weiss, H. & Co., 20 Cliff St., N. Y

Tinners' Trimmings.
Vogel, Wm. & Bros. Brooklyn, N. Y.

Tin Plate.
American Tin Plate Co., New York.
Bruce & Cook, 186 to 190 Water St., New York.
Coe, Jas. A. & Co., Newark, N. J.
Follansbee Bros. Co., Pittsburgh, Pa.
Gummey, McFarland & Co., Phila., Pa.
McClure & Co., Pittsburgh, Pa.
Meurer Bros. Co., Brooklyn, N. Y.
Osborn, J. M. & L. A., Cleveland, Ohio.
Taylor, N. & G. Co., Philadelphia, Pa.

Tin Scrap.
Vulcan Metal Refining Co., 157 Cedar St., N. Y.
Vulcan Western Co. Streator, Ill.

Tool Grinder.
Robertson Mfg. Co., Buffalo, N. Y.

Tools and Machines, Steam and Gas Fitters'.
Armstrong Mfg. Co., Bridgeport, Conn
Curtis & Curtis Co., Bridgeport, Conn.
Saunders', D. Sons, Yonkers, N. Y.

Torches, Plumbers.
Clayton & Lambert Mfg. Co., Detroit, Mich.

Tubing.
Kirk Mfg. Co., Toledo, O

Valves.
Am. Steam Gage & Valve Mfg. Co., Boston, Mass.
Crosby Steam Gage & Valve Co., Boston, Mass.
Jenkins Bros., 71 John St., New York.
Morgan & Co., Chicago.

Ventilating Apparatus.
American Blower Co., Detroit, Mich.
Buffalo Forge Co., Buffalo, N. Y.

Venilators and Chimneys.
Iwan Bros., Streator, Ill.

Ventilators and Chimney Caps.
Berger Bros. Co., Phila., Pa.
Buffalo Forge Co., Buffalo, N. Y.
Fenn, Geo. E., Boston, Mass.
Globe Ventilator Co., Troy, N. Y.
Kramer Bros., Dayton, O.
Meurer Bros. Co., Brooklyn, N. Y.
Washburne, E. G. & Co., 46 Cortlandt St., New York.

Washers, Valves, &c.
Marston, I. G. & Co., Boston, Mass.

Washing Machines.
Wayne Anthony Mfg. Co., Ft. Wayne, Ind.

Water Coolers.
National Enameling & Stamping Co., 78 Beekman St., N. Y

Water Closets.
Colwell Lead Co., 63 Centre St., N. Y.

Water Fronts.
Clark, Henry N. Co., Boston, Mass.

Water Heaters.
Kemp, C. M. Mfg. Co., Baltimore, Md.

Wind Gates.
Miner & Peck Mfg. Co., New Haven, Ct.

Window Frames, Metal.
Smith-Warren Co., Boston, Mass.

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THE METAL WORKER.

With which is Incorporated The Stove and Tin Trade Journal, The Sheet Metal Builder, and Metal.

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LABOR EXCHANGE.

Notices under this heading of reasonable length are inserted free of charge. Only those relating to employment are admitted. Write distinctly on one side of paper only, and do not use postal cards.

Original letters of reference should not be inclosed with replies to advertisements appearing in these columns as they are frequently mislaid and lost. A copy of the reference will serve the purpose.

HELP WANTED.

A CORNICE MAKER who can do a little cutting and understands inside and outside work; eight hours; $4 per day; steady work. Guilfoy Cornice Works, San Francisco, Cal. May 10

A competent TINSMITH; steady work year around for the right man; apply at once. W. H. Wilcox, 517 East Main street, Little Falls, N. Y. May 10

TINSMITH, first-class, to take charge of shop; blow pipe and exhaust work; first-class pattern cutter; state wages wanted and qualifications; steady position, New York. "A. S., 14," care *The Metal Worker*, New York. May 10

A first-class, all around TINSMITH to take charge of shop; must be familiar with power machinery, able to handle men and a hustler; state wages and experience. "Able," care *The Metal Worker*, New York. May 10

A young man with some experience, acquainted with the metropolitan district, to wholesale stoves, ranges, furnaces and refrigerators, also cover the State of Connecticut; a young man of right habits, character and ability will be appreciated and have a permanent position. J. Brown, Bedford, Mass. May 10

Two first-class CORNICE MAKERS for in and outside work; apply at once; $3 per day for steady, sober men. Newburgh Cornice Works, Newburgh, N. Y. May 10

Several first-class TRAVELING SALESMEN, familiar with the tin plate and sheet metal trade to represent us in portions of Virginia, North and South Carolina, East Tennessee and Northern Georgia; no one need apply except those familiar with the business and can begin work at an early date. N. B. Handy Company, Lynchburg, Va. May 10

At once, a first-class PLUMBER that has had experience at first-class plumbing; am willing to pay good price for right man; must be temperate; none others need apply. Fleming & Crown, Brattleboro, Vt. May 10

An experienced PLUMBER, capable of making wiped joints and understand the re-action of furnaces, hot water and steam work; must be sober, a thorough mechanic, also capable of managing a shop; married man preferred. Davidson Heating & Construction Company, Hanover, Pa. May 10

A good TINNER; one with some knowledge of iron work preferred; permanent job for good man; none other need apply. E. W. Wilcox, Albion, N. Y. May 10

We could use a few first-class all around men on PLUMBING, STEAM and GAS PIPING and SHEET METAL WORK; wages, $15 per week; nine hours per day. Hull Brothers Company, Danbury, Conn. May 10

Two first-class CORNICE MAKERS; one first-class FURNACEMAN; two first-class TINNERS and JOBBERS; wages, $3.50 per day, eight hours; must be steady and reliable men; send references. C. B. Smith, corner King and Fourth avenue South, Seattle, Wash. May 10

Two TINSMITHS; fair wages and steady work by the year; for further particulars apply Gfell & Bailey, Norwalk, Ohio. May 10

A young man as PLUMBER and GAS FITTER in town west of Pittsburgh; state wages expected; steady work for right man; first come first served; write at once. G. Whitehill, Butler, Pa. May 10

Experienced SALESMAN who calls on the hot air furnace trade to handle our registers on commission; new feature in hot air registers: state territory covered. The American Castings Company, Akron, Ohio. May 10

A FORMER and POWER PRESS HAND; must have experience and also run a cornice press. "E. A. C.," care *The Metal Worker*, New York. May 10

A good all around TINNER, SHEET IRON and FURNACE WORKER; must be sober and reliable; state wages wanted, age and experience; give references; a good, quick workman can have steady work the year around. P. Y. Jones, 4 Third street, Fond du Lac, Wis. May 10

WOOD PATTERN MAKER; first-class workman, skilled in store and furnace work; must give references. Stamford Foundry Company, Stamford, Conn. May 3

Two good TINNERS; must be good on jobbing, eave trough and furnace work; good wages and steady work. Apply at once to E. N. Howell Hardware Company, Dixon, Ill. May 3

Reliable, energetic TINNER; good wages and steady work to the right party. J. Kuchler, 325 West Forsyth street, Jacksonville, Fla. May 3

Ten first-class STOVE MOUNTERS to work on gas ranges. Abendroth Bros., Port Chester, N. Y. May 3

METAL WORKERS on punches and riveters, &c.; steady work near New York. "B. C.," care *The Metal Worker*, New York. May 3

Six reliable BLOW PIPE MEN; men who are competent to put up work on the road and also familiar with shop work; good wages and steady work. The Ohio Blow Pipe Company, corner Seneca and Michigan streets, Cleveland, Ohio. May 3

At once, a PLUMBER, one that can do tinsmithing, furnace and range work; must be a good workman; steady job to the right man; state experience and wages expected. E. A. Burbank, Berlin, N. H. May 3

First-class SALESMAN for steam and hot water heating and general construction; work on commission; strictly confidential; permanent arrangement will be made with good man who can get business. "Construction," care *The Metal Worker*, New York. May 3

At once, a first-class TINSMITH; one that can do plumbing and be able to do any job that comes to a country job shop; steady job to the right man; state wages and experience. E. A. Burbank, Berlin, N. H. May 3

First-class JOBBING TINSMITHS; steady work to sober and reliable men. Howard Heating Company, Worcester, Mass. May 3

Two TINNERS; good on outside work; steady work the year around; work in the shop in winter; state wages wanted. P. H. Bayley, Sidney, Ohio. May 3

At once, a first-class TINSMITH; one who understands pumps, furnaces, plumbing and country work generally; state wages wanted and give references; a steady job for the right man. C. H. & E. D. Brigham, Palmyra, N. Y. May 3

SITUATIONS WANTED.

Side line wanted by SALESMAN having established trade in New York and Pennsylvania with hardware and house furnishing trade. "Salesman," P. O. Box 383, Royersford, Pa. May 10

By a New York licensed plumber in country; can do jobbing or new work, take charge or estimate; sober, honest, quick and industrious. Thos. S. Moran, 71 West Ninety-sixth street, New York. May 10

STOVE SALESMAN, now traveling New England, will be open for an engagement July 1; would like to connect myself with a good live firm having an up to date line. "Stoveman," care *The Metal Worker*, New York. May 10

Would like opening with a firm making a line of ranges, furnaces and heaters; have had excellent foundry experience; capable of handling men; understand the details of the business and could from experience render good service in sales department; am 32 years old, capable, energetic and experienced; best of references. "Chapin," care *The Metal Worker*, New York. May 10

By a young man of seven years' experience in the plumbing business, also in steam, hot water and gas fitting; can furnish best of reference as to style of work, habits, &c. Arthur A. Harding, 802 Third street, South Boston, Mass. May 10

TINSMITH; all around hand for in and outside work; good jobbing; plumber; country preferred. Harry Rosenbloom, 92 Madison street, New York. May 10

Steady position by young licensed PLUMBER; experienced in all branches of the trade. "Bob," care *The Metal Worker*, New York. May 10

By a first-class, A1 tin, copper and sheet iron worker as FOREMAN; can furnish best of references; good experimenter; quick, neat and accurate workman; understand all kinds of presses, dies and machinery; wages $1,500 a year; married, 28 years of age; ready to start work at once. Frank Allers, 387 Summit avenue, Jersey City, N. J. May 10

By a practical TIN and SHEET IRON WORKER, understanding all kinds of work usually done in country shops; strictly temperate. George Edgar, Stamford, Conn. May 10

By a PLUMBER, HOT WATER and GAS FITTER; sober and reliable; good references. W. E. Sullivan, Ridgefield, Conn. May 10

As ESTIMATOR with steam or hot air house, by a man of thorough experience in the erection of plants complete. "Estimate 510," care *The Metal Worker*, New York. May 10

By a steady, sober and reliable TIN and SHEET IRON WORKER; nine years' experience; wages $11 per week for permanent situation; references. "S. T. G.," Whitesboro, N. Y. May 10

Steady position by young man (23) as STEAM and PLUMBER'S HELPER; three years' experience; willing to go anywhere; can render excellent service on contract work; references if desired. "P. K.," care *The Metal Worker*, New York. May 10

By PLUMBER; 14 years' experience; good all around mechanic; understands all branches of the trade; wishes steady position city or country. J. Dunn, 76 East 105th street, New York. May 10

By TIN and SHEET IRON WORKER with 15 pears' experience; is good at bench or outside work; can lay out his own patterns; would like steady position with some good firm. Otto Fink, 1708 Boulevard, Jersey City, N. J. May 10

As MANAGER of a small crucible skylight and jobbing shop, by an experienced mechanic; would like to take shop on commission. "W. B.," care *The Metal Worker*, 117-119 South Fourth street, Philadelphia, Pa. May 10

By a first-class MECHANIC on steam or hot water boilers or light machinery, bench or floor; knows how to handle men to best advantage; 15 years' experience as foreman; can furnish reference. "Foreman," care *The Metal Worker*, 117-119 South Fourth street, Philadelphia, Pa. May 10

By a TIN and SHEET IRON WORKER and GENERAL JOBBER; city or country; at the bench or assist in the store; watchman; satisfaction guaranteed. Charles B. Garrison, West Palm Beach, Fla. May 10

By TINNER to work five to seven hours daily; inside preferred, but no objections to some outside work; city or country; anywhere east of Mississippi River; can help in store; speak some German and give good references; accustomed to the work usual in country shop; some knowledge of pipe work; state wages per hour paid and kind of work. "E. W.," care Samuel Wortheim Company, 47 Vesey street, New York. May 10

SALESMAN with an established trade from New York to Albany, both sides of the river, also New Jersey, with a personal acquaintance of over seventy architects, will be open for engagement after May 15 in the furnace, range and steam and hot water business; can show the best results for over seven years. "Worker," care *The Metal Worker*, New York. May 10

A first-class PLUMBER wishes work in city or country. Thomas McSpedon, 328 East Sixtieth street, New York. May 10

Position wanted by first-class PLUMBER; competent to estimate from plans and take charge of men; neat lead worker; also good steam and hot water fitter; young man, 30 years old, married, reliable in every way; good references; position wanted with firm who can take 17 year old boy as apprentice. "Reliable," care *The Metal Worker*, New York. May 10

By a PLUMBER and GAS FITTER; first-class mechanic; good lead worker; handy at tin and stove work; can furnish reference; moderate salary. Louis Bykeefer, 1231 St. Mark's avenue, Brooklyn, N. Y. May 10

By first-class PLUMBER; 15 years' experience at gas fitting, pipe fitting and windmill work; sober and industrious; best of reference; city or country. James Yancer, 531 Grant avenue, Van Nest Park, N. Y. May 10

First-class FOUNDRY FOREMAN and MANAGER wishes position in country foundry as foreman and manager; understands all details of foundry work and good molder; can keep books, mix and melt iron or brass, and get business from outside if desirable; can start and run a foundry to profit; will work at moderate salary; any concern needing good services in securing profitable work please address "Aggressive," care *The Metal Worker*, New York. May 10

As MANAGER or FOREMAN of plumbing, heating, tin and sheet iron business; can estimate, buy, install work and manage men; have had charge of 25 to 30 men; am a good solicitor of work: began in the business at the age of 16 and have constantly followed it since: location in New England States preferred; best of references as to character and ability can be given. "A. B. C.," care *The Metal Worker*, 70 Kilby street, Boston, Mass. May 10

A first-class STOVE PATTERN FITTER, experienced in all kinds of stove and heater patterns; also as FOREMAN; wishes to correspond with some reliable stove house desiring the services of a competent man in their pattern shop; references furnished. "Pattern Fitter," care *The Metal Worker*, New York. May 3

For Sale.

A $6,000 to $7,000 Hardware stock in the heart of the famous Red River Valley of North Dakota. Good location in a growing city of 1800 inhabitants. On main line of the Northern Pacific R.R. and Breckenridge and Larimore divisions of the Great Northern R.R. Also on one Northern Pacific and two Great Northern R.R. branches. Sales $14,000 to $18,000 per year. Only one other hardware store in city. Large country to draw from. Doing a good and very profitable business. Business established 12 years. No dead stock, goods up-to-date and agency for the leading articles. Good location and one of the best hardware stores in the State. No bonus and the good will of proprietor follows sale. This is a money making proposition and not to be found open very often. Reasons for selling made known upon application.

Address "HARDWARE STOCK,"
Care *The Metal Worker*, New York.

NEGOTIABLE HALF INTEREST

in our enterprise. Goods in satisfactory use ocean to ocean. (Limited.) We give (as conceded) superior service and use less fuel relatively than any other stoves and furnaces on the market. Have A1 Iron Patterns for ten (10) different sizes stoves and twenty (20) different styles and sizes of furnaces. We make two (2) distinct systems of heating. Wish to incorporate and expand. No debt. TURNER ZEPHYR HEATER CO., 140 Kentucky Ave., Indianapolis, Ind.

FOR SALE.

One-half interest in best Cornice, Slate and Tin Shop in Southern Kansas. Tools and machines are complete. Address

136 N. LAWRENCE AVE.,
Wichita, Kan.

TO RENT.

Tin and Plumbing Shop with all tools. Connected with Hardware, Tinware and Stove Store. Established over 30 years. Plenty of work. No competition. Call or address

JAMES VAN DERVEN, Chester, N. J.

WANTED

One second-hand 8 ft. Cornice Brake.
One second-hand 36 in. or 48 in. Sq. Shears, hand power.
Send lowest price and where to be seen.

Address GEO. H. WILLIAMS,
644 Park Place, Brooklyn.

WANTED.

An 8 ft. Square Shear in good condition, at a bargain. Address

"CORNICE SHOP,"
2050 Archer Ave., Chicago, Ill.

Who Wants Him?

A first-class sheet metal worker and plumber, thoroughly posted in all branches of the trade strictly sober and industrious, 33 years old and married, at present employed as foreman in up-to-date shop at a salary of $100 per month, wants to invest $2,000 in a business where such a man is needed. Reference given and required.

Address "BUSINESS,"
Care *The Metal Worker*, New York.

FOR SALE.

An established manufacturing establishment of Warm Air Furnaces, etc., which has paid good dividends for the last eleven years. Owing to the strained relations of labor, and the age of the manager, it is for sale very much below its original cost. Parties with $25,000 can step into an established business. For particulars inquire of BOX A, Ashtabula, Ohio.

WANTED.

Second-hand 8 ft. Robinson Cornice Brake.

LOCK BOX 107, Rondout, N. Y.

FOR SALE.

House Furnishing Stores, China, Glass, Tin, Stoves and Hardware. Will invoice $1,000 to $1,500. Rent cheap. OTTO E. KOCH, 1028-1030 Freeman Ave., Cin., O.

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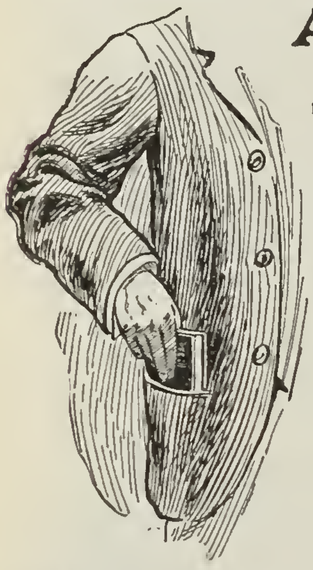

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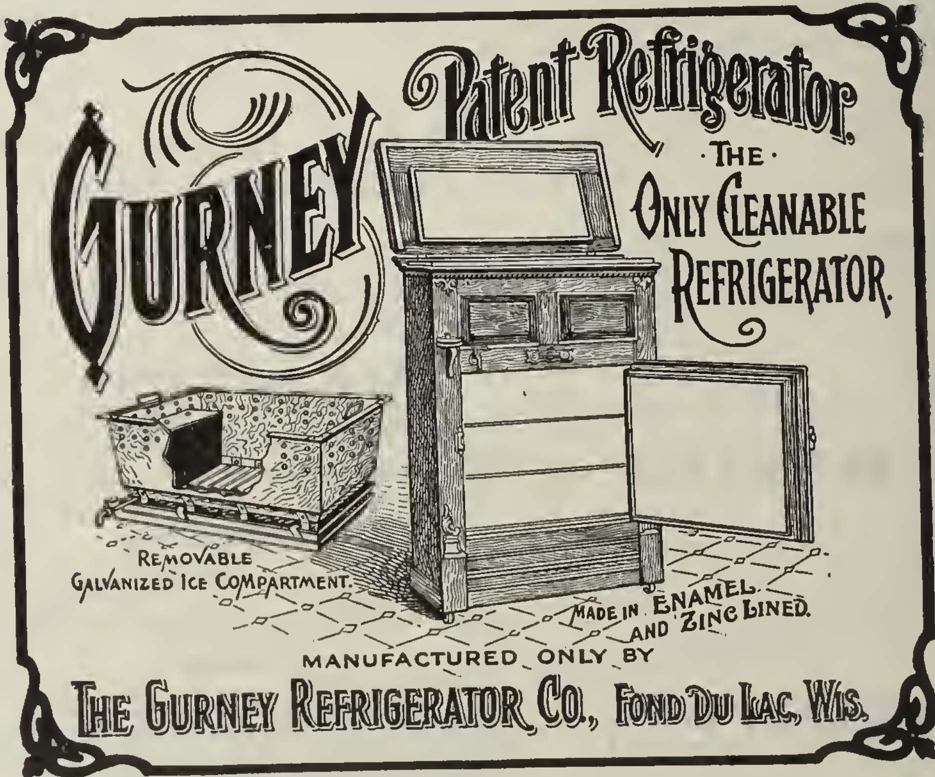
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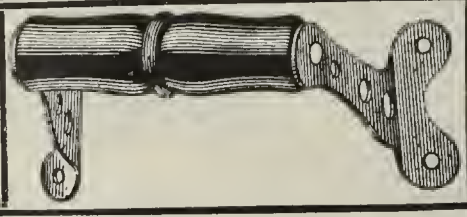
THE HIGHEST IN QUALITY.		WRITE FOR PRICE.
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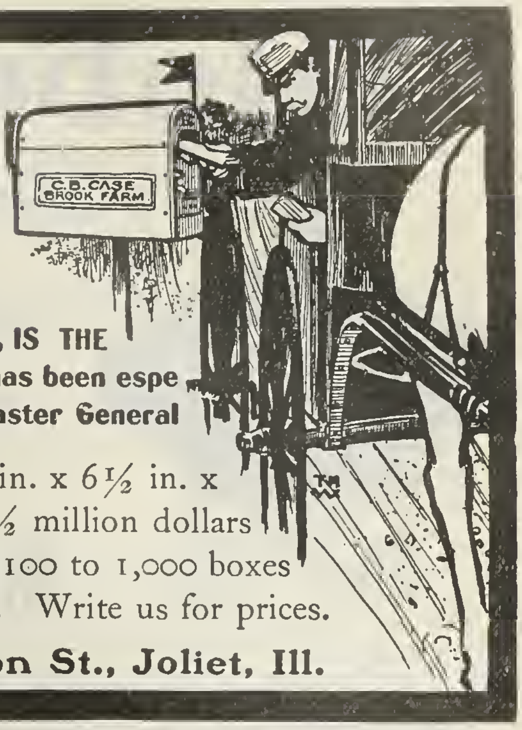

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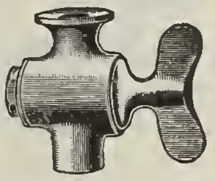

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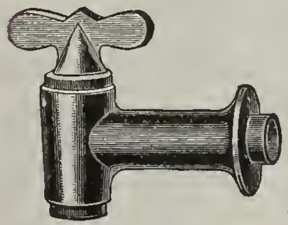

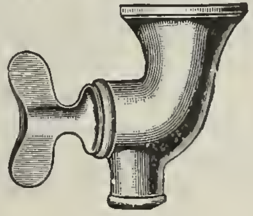

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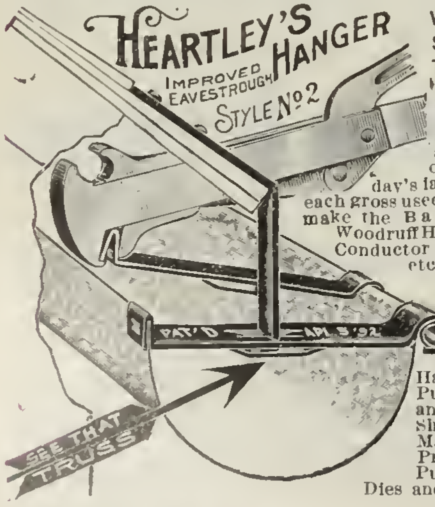

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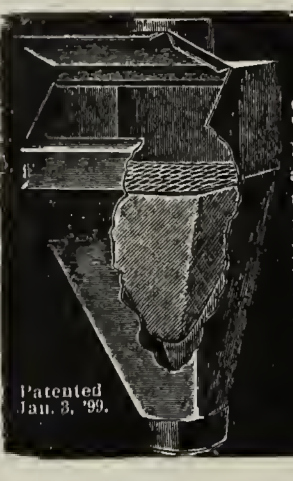
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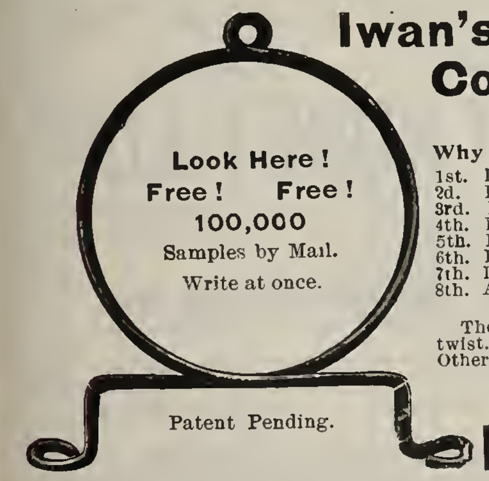

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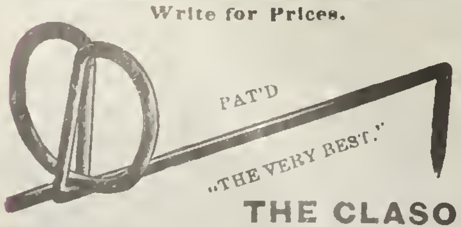

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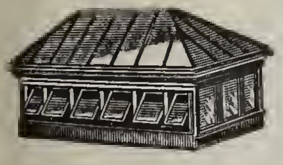

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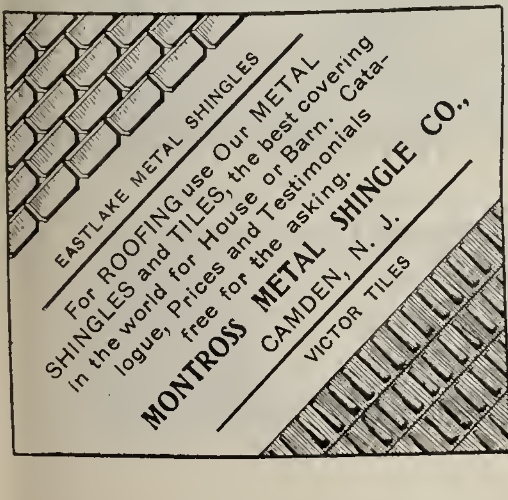

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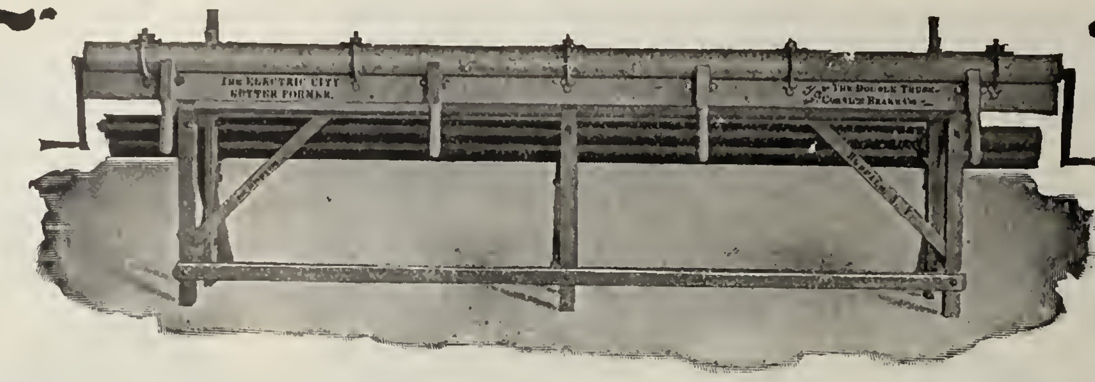
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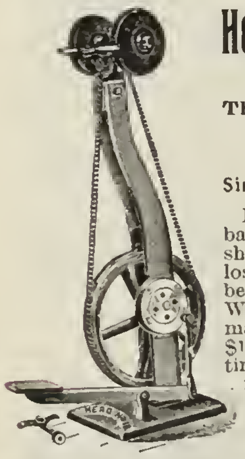

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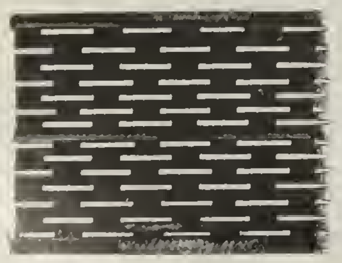

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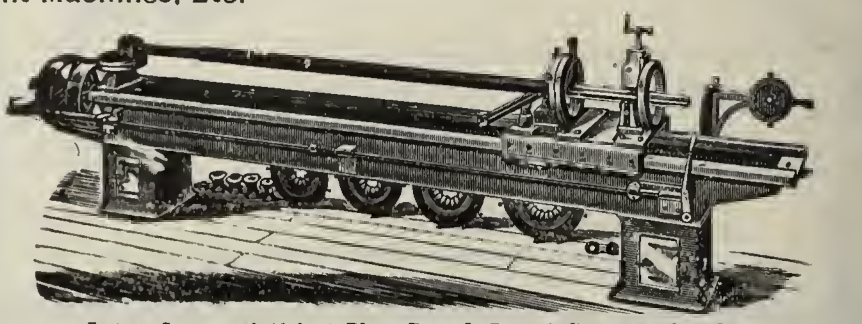

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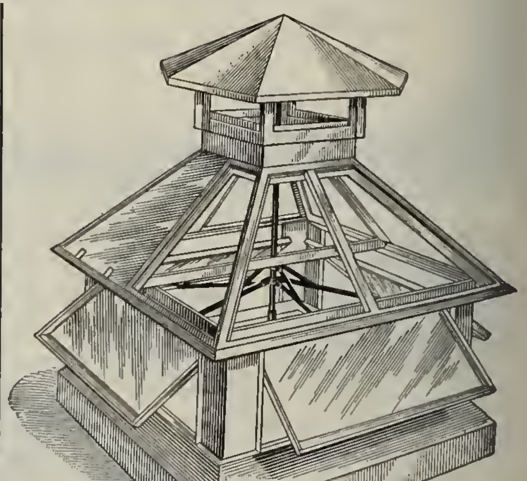

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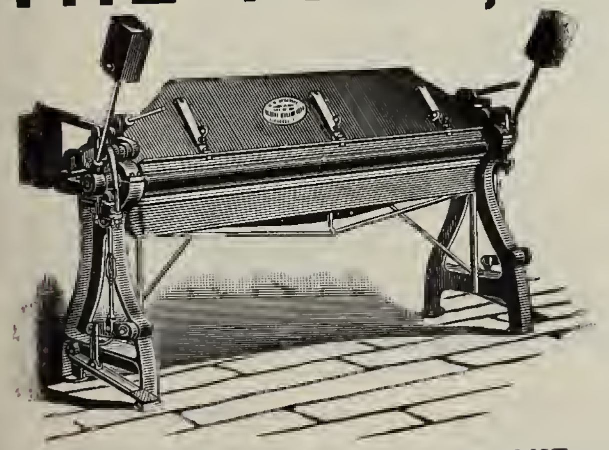

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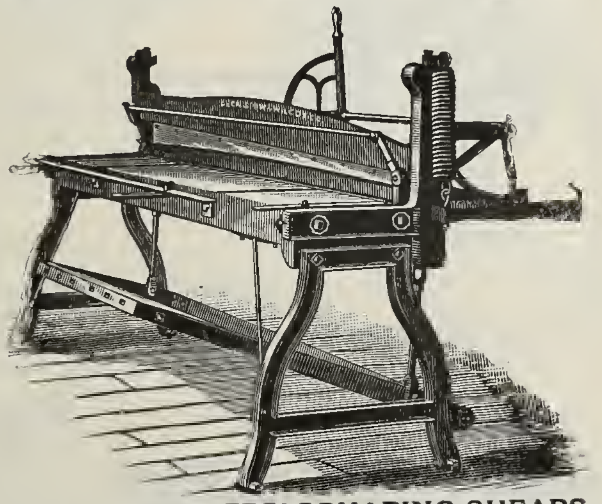

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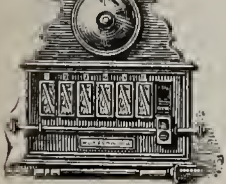

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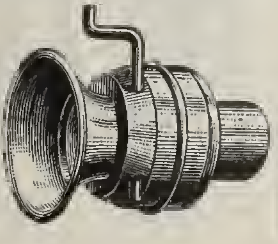

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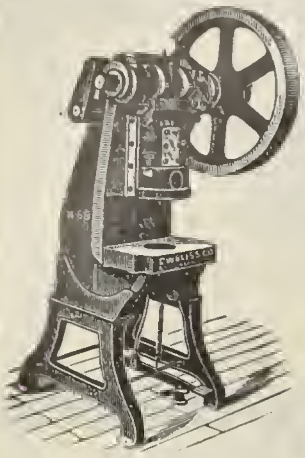

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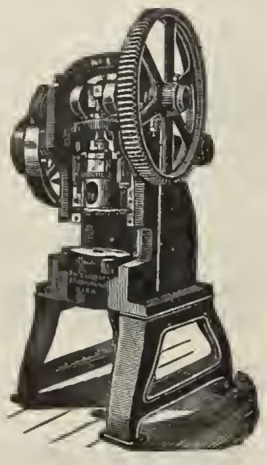

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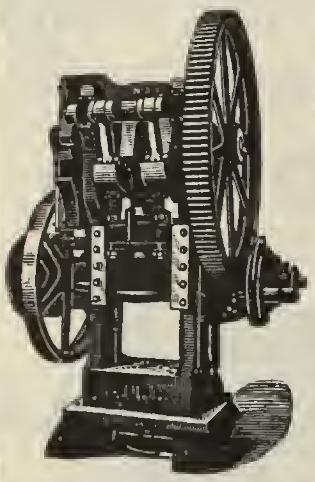

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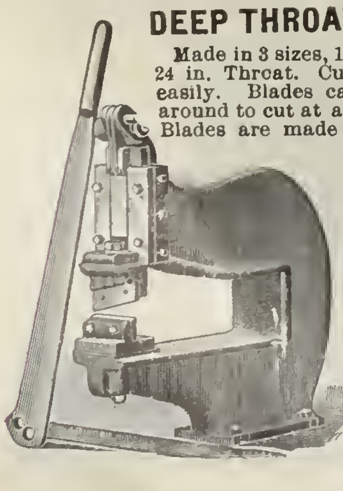

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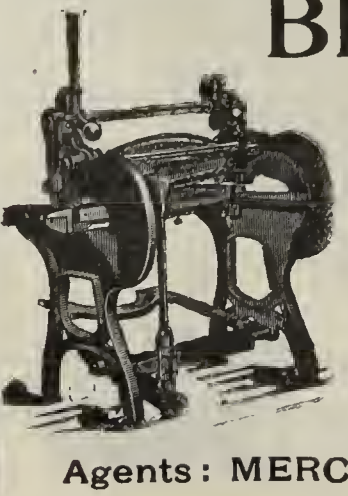

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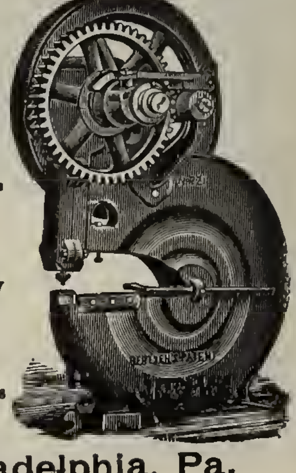

Agents: MERCHANT & CO., Philadelphia, Pa.

HAND POWER BRAKE

NEW IMPROVED GEARED.

J. M. ROBINSON & CO. CIN. O.
PAT'D SEPT. 16 1873 NOV. 17 1888
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P
H

6 AND 8 FOOT.

Will bend No. 14 gauge and lighter, or when double geared with hand power will bend No. 10 gauge in 6 and 8 foot lengths. Write for descriptive circular and prices.

The J. M. Robinson Mfg. Co.,
225-229 West 2nd St.,
CINCINNATI, O.

KEENE FOOT POWER
CORNICE BRAKE.

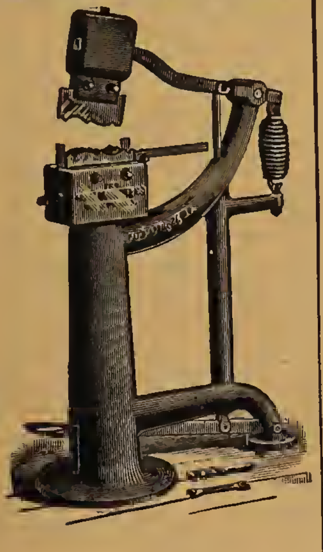
Easiest to Operate.
Strongest and Best.

SHEET METAL WORKING MACHINERY OF ALL KINDS.

FOOT POWER
CURVE MOULDING HAMMER.

The cheapest, most convenient and best sheet metal moulding former ever offered. Produces a greater variety of work than any other. Quickly adjusted and easily operated. Write for prices and discounts on this or any sheet metal working tool you may desire. We will name you bottom prices.

GEO. C. KEENE & CO. CIN. O.
GEO. C. KEENE & CO.

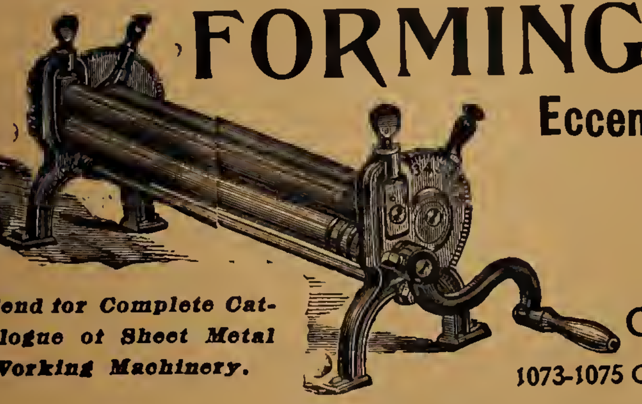


CINCINNATI, O.

20th Century Groover
for Hand Power. We also make them for Belt Power.

20th CENTURY GROOVER. Handiest out.
Operated from one position. Automatic knockout and *Quick Return*. Grooves 22 gauge.
Write for circular. Made by
W. A. WHEELER, Indianapolis, Ind.

IMPROVED
Patent Automatic Can Body
Double Lock
SEAMING MACHINES
COMBINATION PRESSES and DIES,
SHEET METAL TOOLS.
W. J. GORDON,
218 New Street,
PHILADELPHIA, PA.



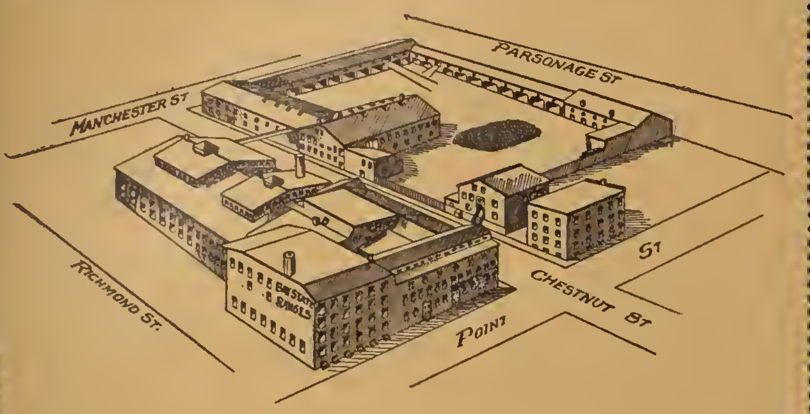
FORMING ROLLS
Eccentric Adjustment.

The advantage in using this machine is the quick adjustment of the back roll by means of graduated eccentrics.

Send for Complete Catalogue of Sheet Metal Working Machinery.

OLIVER POCOCK,
1073-1075 Clark St., Cincinnati, O., U. S. A.

PHILADELPHIA MACHINE TOOL CO.,
445 North Darien St., Phila., Pa.
TESTING MACHINES and
SOLE AGENTS for HENNING
TESTING APPARATUS.
PRESSES and SHEARS, CORNICE PRESSES
CURVED MOULDING MACHINES, etc.



This print shows our two acre plant, where Bay State Stoves, Ranges and Furnaces have been turned out steadily for more than sixty years. We are centrally located in the City of Providence and the only Stove Foundry in the busy manufacturing State of Rhode Island. Come and see us.

Barstow Stove Company,

BOSTON, PROVIDENCE, NEW YORK.

TO LIGHT STORES

Use Frink's sectional glass cluster reflectors They are made to last and to reflect all the light there is. The most practical fixture made for store lighting.

I. P. FRINK, 551 Pearl St., New York.

BRUCE & COOK

TINNERS'

TOOLS and MACHINES.

TINNERS' SUPPLIES

186, 188 & 190 Water Street, an
248 & 250 Pearl Street,
NEW YORK.

L. & R. WISTER & CO.,
Bullitt Building, Philadelphia.

Dunbar Foundry Pig Iron.
Dunbar Connellsville Coke for Foundry Use.
American Sheet Iron Co.'s Sheet Iron.
American R. G., cleaned, of uniform black color.
Dealers in all kinds of Iron and Steel Scrap.

UTICA PIPE FOUNDRY CO.

"UTICA PIPE IS THE BEST." Cast Iron Soil Pipe. Cast Ir
Water Pipe. Plumbers' Supplies and Lead Pipe.
CHARLES MILLAR & SON CO., Selling Agents, Utica, N. Y

HUB RANGES

If you want the best line; the line with the **most attractive** and progressive selling features, look into the merits of the

Hub
Line of Ranges,
Steam and Water Heaters;
Hot Air and Combination Furnaces.

SMITH & ANTHONY CO., Boston.

A Cheap Priced

stove is usually shoddy. Shoddy means half fitted. You fit the other half which makes the shoddy cost more than first class goods. There's no use in talking if you believe in quality — sell

GLENWOODS.

Write the Weir Stove Company, Taunton, Mass.

The numerous imitations of the TAYLOR OLD STYLE only prove its superiority and increase its sales.

N. & G. TAYLOR CO.,
Manufacturers of Roofing Tin,
Established 1810. PHILADELPHIA.

SOLDER

Our Various Brands:
ADMIRAL, FORT PITT, FREEHOLD,

Are made from strictly New Metals and the Proportions Guaranteed.

McCLURE & CO.,
Manufacturers of Tin Plate,

PITTSBURGH, PA., 211, 213 and 215 Second Ave.
PHILADELPHIA, PA., 115 North 7th Street.

Index to Reading Matter, Page 74. Index to Advertisements, Pages 76 - 78.

The Metal Worker

A WEEKLY JOURNAL OF THE ROOFING, STOVE, CORNICE, TIN, PLUMBING AND HEATING TRADES.

With which is Incorporated The Stove and Tin Trade Journal, the Sheet Metal Builder, and Metal.

. LVII.
BER 20.

NEW YORK AND CHICAGO, MAY 17 1902.

ONE DOLLAR A YEAR.
SINGLE COPIES 5 CENTS.

HALL'S BRASS PIPE WRENCH.

With a GRIP that GRIPS without Marring the Pipe.

No. 1 Grips up to 1 Inch. No. 2 Grips up to 2 Inches.

OUR CATALOG OF ENGINEERS' AND STEAM FITTERS' TOOLS WILL INTEREST YOU.

ALWORTH MFG. CO. Boston, 128 Federal St. New York, Park Row Bldg.

The Gorton Side Feed Boilers

FOR STEAM AND HOT WATER HEATING.

INVESTIGATE FOR YOURSELF.

Send for Catalogue and Prices.

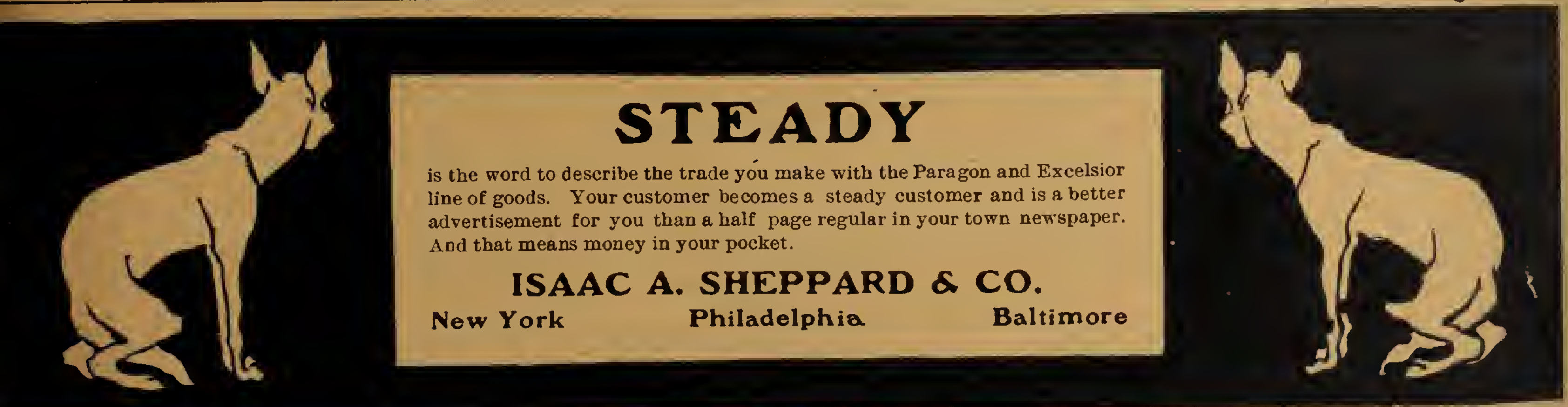
GORTON & LIDGERWOOD CO.,

96 Liberty St., NEW YORK. Old Colony Bldg., CHICAGO.
77 Oliver St., BOSTON. Prudential Bldg., ATLANTA, GA.

STOVE LININGS **McLEOD & HENRY CO.,** TROY, N. Y.

AMERICAN STEAM and ALTITUDE **GAUGES,** POP SAFETY **VALVES.**

Heating Specialties. American Steam Gauge & Valve Mfg. Co., Bismark St., Boston, Mass., U. S. A.



STEADY

is the word to describe the trade you make with the Paragon and Excelsior line of goods. Your customer becomes a steady customer and is a better advertisement for you than a half page regular in your town newspaper. And that means money in your pocket.

ISAAC A. SHEPPARD & CO.

New York Philadelphia Baltimore

Selling Apollo galvan
ed iron is only show-
g how easy and quick
is to work, and how
erfect the job is.

merican Sheet Steel Company, New York

Steam Specialties.

ELIEF and LEVATOR VALVES, TEAM TRAPS, TEAM AND WATER EDUCING VALVES, ANK TEMPERATURE CONTROLLER and A No. 1 DAMPER REGULATORS

NOISELESS BACK PRESSURE VALVES, PUMP GOVERNORS, STEAM and OIL SEPARATORS

KIELEY AND MUELLER,
-17 W. 13th St., - NEW YORK.

Why do women like

P. P. Stewart Stoves?

Because they lessen domestic toil and have uniform baking qualities, and keep the digestion of the family in good working order.

FULLER & WARREN CO., Troy, N. Y.

This Ad changes every week.

NOTICE.

Silver, Nickel Platers and Brass Goods Mfrs. MATERIAL FOR DRYING PURPOSES.

Write for prices to John Sommer's Son, 355-365 Central Ave., Newark, N. J.

CROSBY SPRING-SEAT

GLOBE and ANGLE VALVES, IRON and BRASS.

All working parts renewable without taking the valve from piping. All parts interchangeable. Guaranteed not to leak at high pressure. Send for circular.

Crosby Steam Gage & Valve Co.,

BOSTON: 95 Oliver St. NEW YORK: 78 John St. CHICAGO: 21 23 W. Lake St.

JENKINS IMPROVED AUTOMATIC AIR VALVES.

Suitable for high or low pressure. Take no more room than an ordinary air cock. Endorsed by the leading steam experts as the best made and the quickest working. All genuine stamped with our Trade Mark.

JENKINS BROS., New York, Boston, Chicago, Philadelphia.

FOLLANSBEE BROTHERS CO.,
328-330-332 Second Ave.,
Pittsburgh.
Galvanized and Black Sheets.
Sheet Copper, Conductor, Eave Trough.

Our sales of
Follansbee Pure Iron Old Style
increasing wonderfully; it
is Iron Base, not steel.
Makers Scott's Extra Coated
and other Tin Plates.

Philadelphia, 133 Arch Street.
Chicago, 504 North Water Street.
Louisville, 7th and Magnolia.

READ OUR "AD"
Page 9.
MAGEE FURNACE CO.,
Boston.

ROUND OAK STANDARD OF AMERICA

A perfect furnace

The Round Oak Furnace

is the most
durable heater made.
No material
is too good,
No labor too costly.
It is best fitted.
It is air-tight.
It gives greatest heat
for amount
of fuel used.
No fuel is wasted.
It makes no clinkers.
Fire is under
perfect control,
owing to one-piece
air-tight ashpit.
It is reasonable
in price.

Are you interested
in a furnace of quality,
one you can
build up enduring
business with?

*Quality always
the selling feature,
NOT price.*

Estate of

P. D. Beckwith

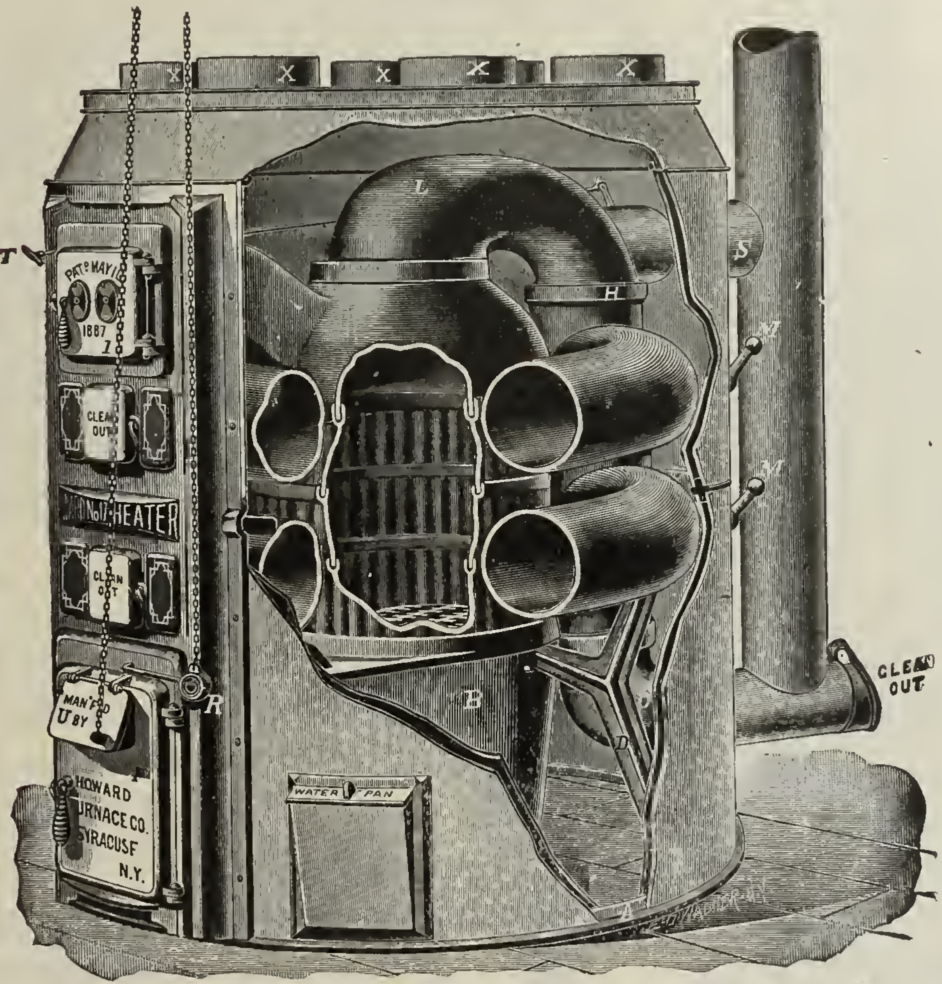
Dowagiac, Mich.

*Makers of
Good Goods only*

HOWARD FURNACES

Very LOW DOWN,
Yet Large RADIATING SURFACE.

THERMAL
HOWARD
HEATERS
COMFORT



LONG FIRE TRAVEL AND ECONOMICAL.

Heat INCREASED.
Fuel DECREASED.

PARIS—GOLD MEDAL—1900.

INTERNATIONAL HEATER CO.,

LARGEST MAKERS OF HEATING AND LIGHTING APPARATUS IN THE WORLD
CATALOGUE OF OUR ACETYLENE GAS MACHINE WILL INTEREST YOU.

UTICA, N. Y.

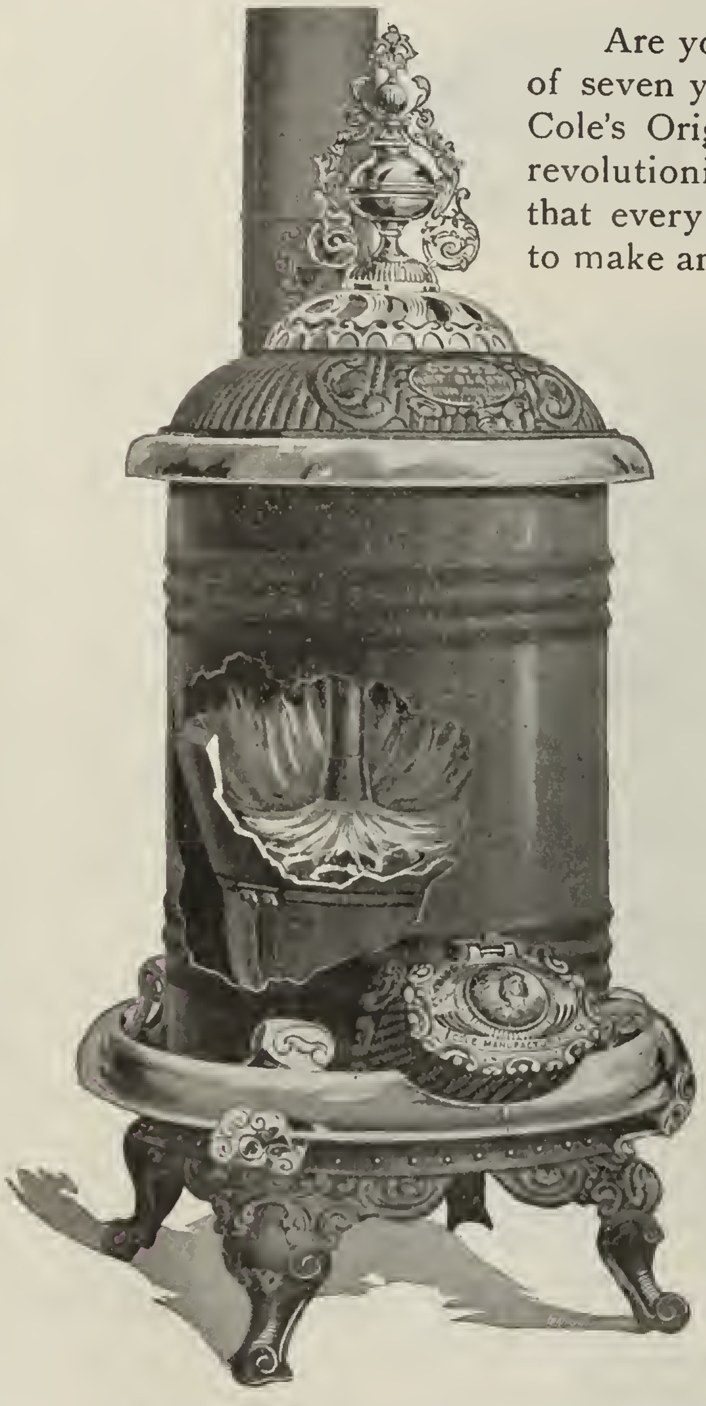
NEW YORK. BOSTON. CHICAGO. DENVER.

COLE'S ORIGINAL

Hot Blast Coal Stoves.

FROM CHICAGO.

Five sizes and three different grades, all guaranteed to remain Air-Tight as long as used. . . .



Shows No. 185 line, 14 ga. body and boiler plate water-tight bottom.

Are you not now convinced that our prediction of seven years ago has been fulfilled—namely, that Cole's Original Hot Blast stove would completely revolutionize the construction of coal stoves and that every stove manufacturer would be compelled to make an imitation?

It is up to you to choose between **The Oak,** which at best will only have a limited future sale, **an imitation** of our stove, which is still an experiment even to the manufacturer turning it out, or **COLE'S ORIGINAL HOT BLAST:**

Which makes $2.00 soft coal equal $8.00 hard coal,

Which gives even heat and cleanliness with cheap soft coal, the people's fuel,

Which is guaranteed to stay air-tight as long as used,

In which the fire is never out with any fuel, even corn cobs,

Which gives better results and greater economy with hard coal than any base burner,

Which will hold fire for thirty-six hours with wood,

Which is built on truly scientific principles and protected by patents that cannot be used in the construction of any imitation

If you will make up your mind to begin pushing our stove vigorously this year you will control the stove trade of your town for many years.

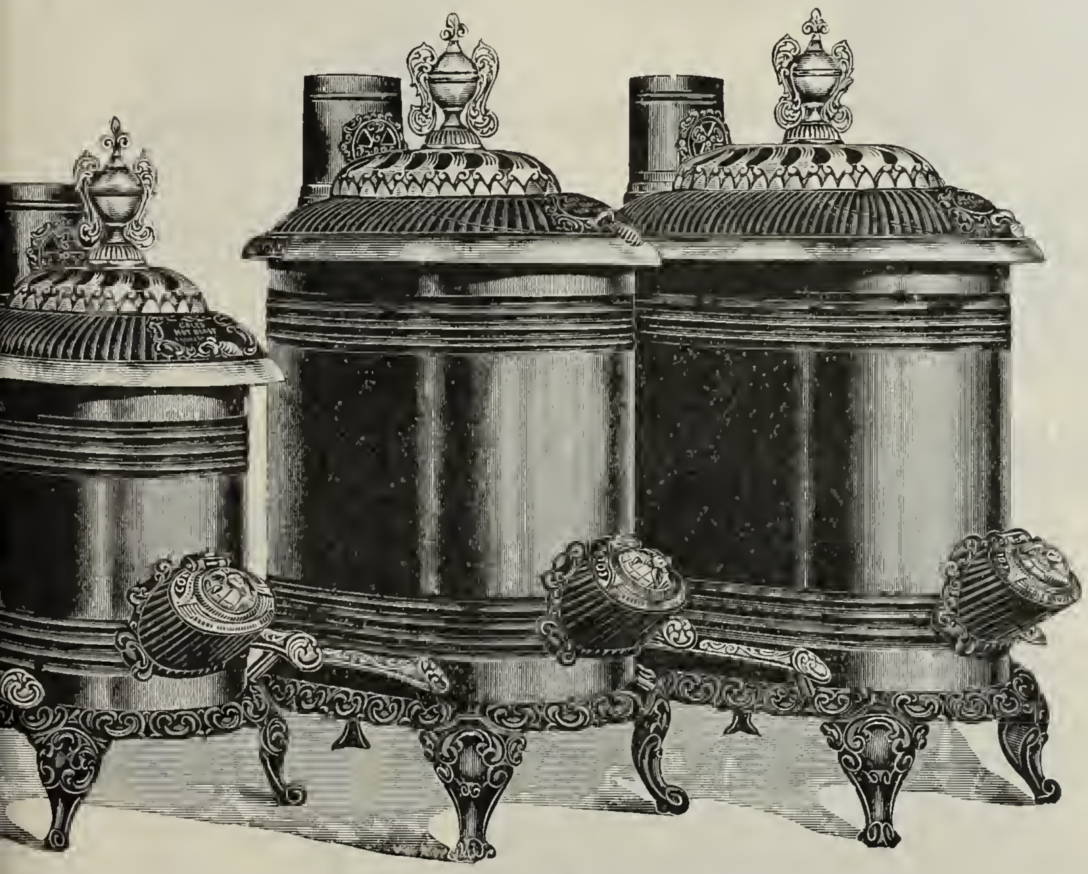
COLE MANUFACTURI

3218-3238 Western Avenue

COLE'S ORIGINAL

Air-Tight Wood Heaters.

THE MOST ECONOMICAL STOVES IN THE WORLD FOR WOOD AND LIGHTER FUEL.



Shows No. 725 line for wood and lighter fuel.

……

A complete line of sizes in seven different styles.

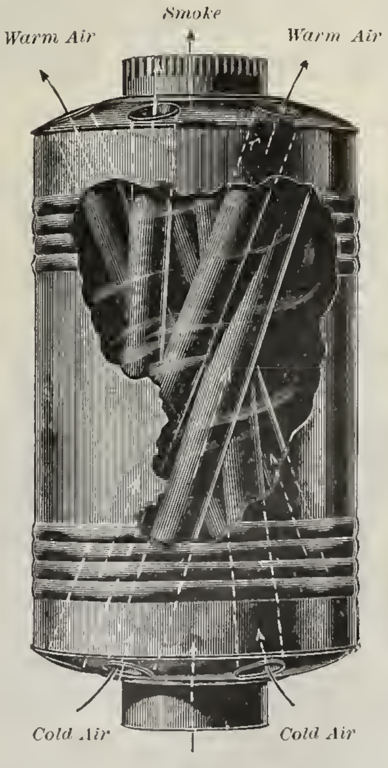
By handling our stoves you are not subject to Department Store and Catalogue House competition.

……

Y HANDLE AN IMITATION, if you can secure the or our Original Heaters which have made the name "AIR- ' famous in all sections of the United States and Canada? er manufacturers in making their so-called improvements toves have added cast bottoms, side doors, ash pans, etc., ause their imitations to leak air and render them worth- ire keepers and fuel savers.

guarantee every stove, coal or wood, bearing our name, to absolutely Air-Tight as long as used. This is a guarantee annot be made on any other stove manufactured.

LUSIVE AGENCIES.—If you do not hold the agency for es write us at once.



Cole's Spiral Tubular Radiator.

The Cheapest and Best on the Market.

IG COMPANY,

CHICAGO, ILLINOIS.

MARION CINDERELLA
CLEANOUT
THE PITTSBURGH STOVE & RANGE CO.

Cinderella

Steel Ranges

REPRESENT

The Best Materials,

The Best Construction,

The Best Workmanship.

THEY ARE

The American Standard for Excellence.

ALL STYLES AND SIZES AT MODERATE PRICES.

We would be pleased to send our catalogue.

STOVES AND RANGES CINDERELLA NEVER FAIL

PITTSBURGH STOVE & RANGE CO.,

PITTSBURGH, PA.

STOVES AND RANGES CINDERELLA NEVER FAIL

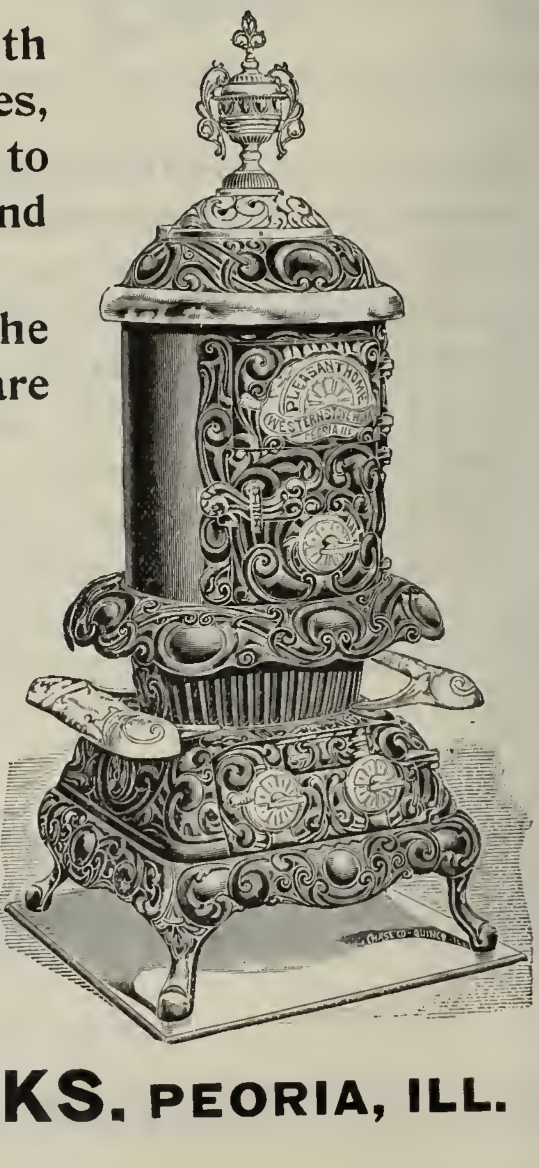
WESTERN SALES AGENT,
W. D. Sager, 38 and 40 Michigan St., Chicago, Ill.

"PLEASANT HOME" Stoves and Ranges.

We come before the Trade this season with our well and favorably known line of Stoves, Cast and Steel Ranges, better able than ever to fill all demands for STRICTLY HONEST MADE and UP-TO-DATE GOODS.

Satisfaction to the dealer because they are GOOD SELLERS.

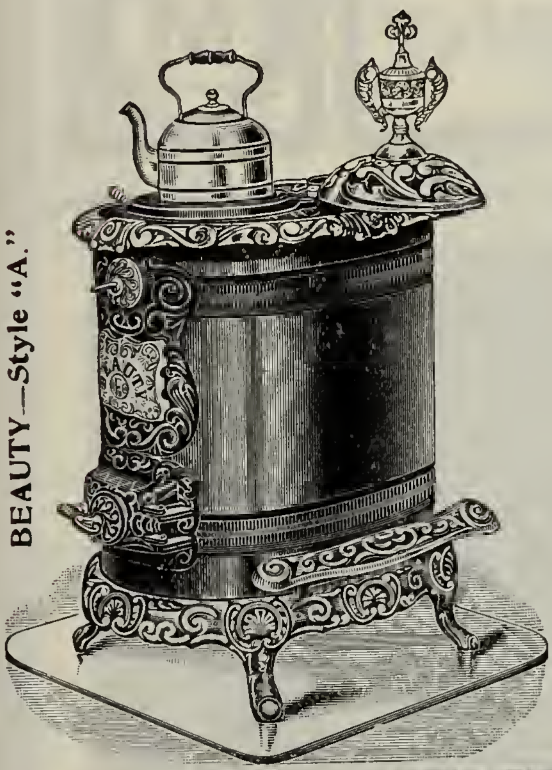
Send for Catalogue and Prices.


PLEASANT HOME
WESTERN STOVE WORKS PEORIA ILL.

WESTERN STOVE WORKS. PEORIA, ILL.

UP-TO-DATE AIR-TIGHTS AND STEEL COOKS

We Want Your Business.


BEAUTY—Style "A."

OUR GOODS ARE
STRICTLY
HIGH-GRADE AND
DURABLE.

We make
65
Styles and Sizes
of
Air-Tight Heaters.

Noxall
Steel
Cook

With or without
Reservoir.

For Wood or Coal.

Has Perfect Square Oven with Aluminum Finish.

Made of the very best material, and containing all the latest features in steel cook construction.

Royal—Style "C."

LARGE CAPACITY.
PROMPT SHIPMENT
GUARANTEED.

WRITE FOR CATALOGUE
AND
PRICES.

PHŒNIX—Style "D."

Quincy Foundry & Novelty Company, QUINCY, ILL.

M TRADE MARK

Moore's Air-Tight Heater

M TRADE MARK

Home, Sweet Home.

There is no place like home, and there's no home so comfortable as that which is furnished with a MOORE'S AIR-TIGHT HEATER.

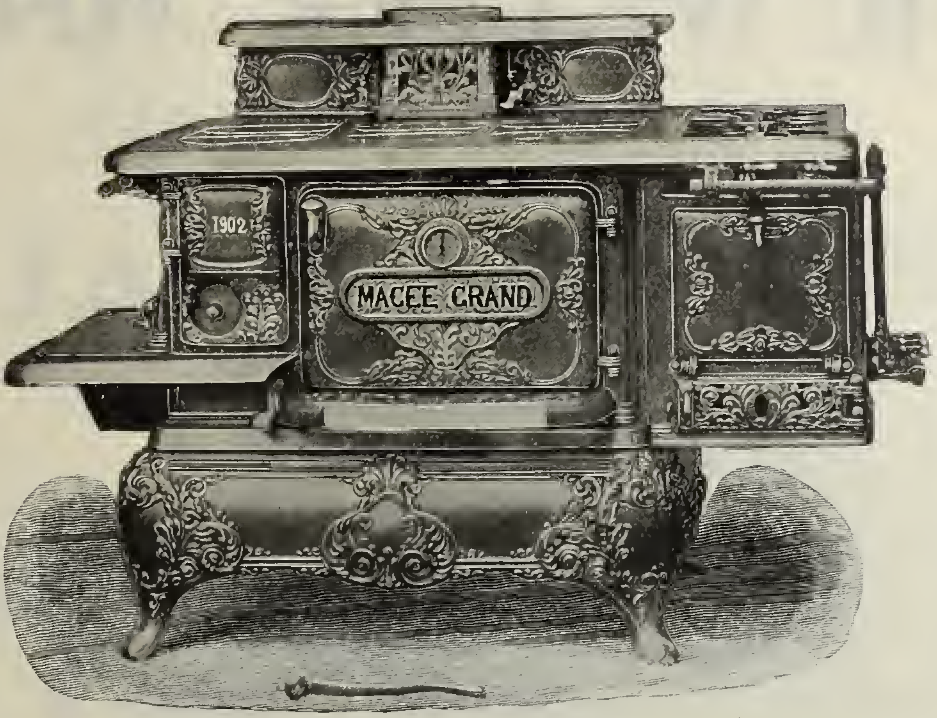
This remarkable stove has now been before the American people for ten years, and has made a record for efficiency and economy which is unexcelled.

Joliet Stove Works

JOLIET, ILLINOIS.

SOME OF OUR LEADING GOODS.

Showing
Gas Oven,
Broiler,
and
Two Burner
Attachments.



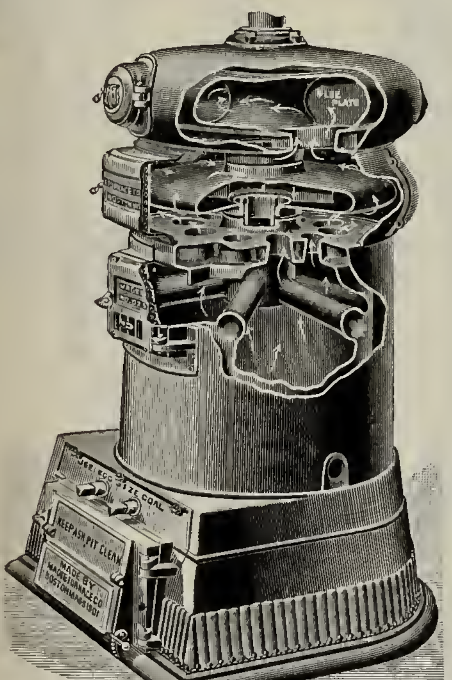
Oven is
10¾ in. wide,
9¼ in. high,
18 in. deep,
with
Broiler
Under Oven.

MAGEE GRAND COMBINATION RANGE

Either Coal or Gas Alone or Both Together.

IMPORTANT.—You can sell the range now and add the gas attachment at any time.

SAME STYLE FOR STEAM ALSO.

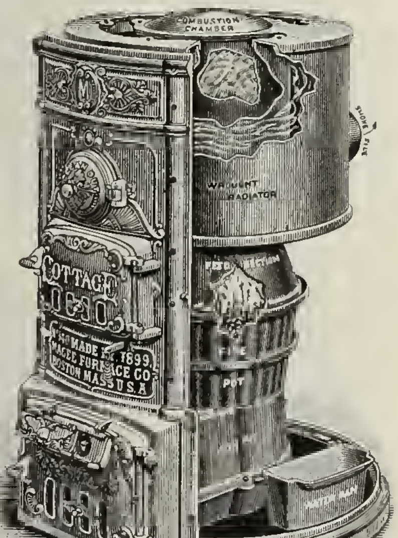


Send for Catalogues and Prices.

DO IT NOW.

Exclusive territory given where we have not already established agents.

MAGEE
COTTAGE FURNACE.



MAGEE FURNACE COMPANY.

32-38 UNION STREET, BOSTON.
Western Agency, - 86 Lake Street, Chicago.

Steam and Hot Water Boilers; Furnaces, Warm Air or Combination Warm Air and Hot Water; Ranges, Stoves, etc. etc.

MOST COMPLETE LINE UNDER ONE NAME IN THE UNITED STATES

New Stove Plant of

THE H. WETTER MFG. CO.

AREA OF PLANT. 10 ACRES.

1 BUILDING, 60 x 250 FT., 3 STORIES.
1 BUILDING, 60 X 260 FT., 3 STORIES.
1 BUILDING, 50 X 150 FT., 3 STORIES.
1 BUILDING, 60 X 60 FT., 1 STORY.
1 BUILDING, 200 X 200 FT., 1 STORY.

MEMPHIS, TENN.
General Office and Southern Distributing Point.

ST. JOSEPH, MO.
Western Distributing Point.

FOUNDRY AT

SOUTH PITTSBURG, TENN.

ONLY 90 DAYS.

Our Plant at Memphis Totally Destroyed by Fire

JANUARY 19.

We Were Again
In Full Operation

APRIL 19.

EVERYTHING NEW, MODERN and UP-TO-DATE.

SUPERB
STOVES and RANGES.

THE H. WETTER MFG. CO.,

Memphis. St. Joseph. South Pittsburg

CITY BUCKEYE RANGE.

For Hard, Soft Coal, Wood or Coke.

MADE IN 17 AND 19 INCH OVEN.

Square Top and Bracket Reservoir Fitted with Water Heater.

AN ATTRACTIVE PIECE OF GOODS AND . . .

A Ready Seller.

Write for Descriptive Catalogue and Prices.

OHIO STOVE CO.

Portsmouth, Ohio.

WROUGHT STEEL

RANGES

LIKE THE

"PACIFIC"

Are best because they're made stronger, better, more perfect than any other similar construction. You should write for prices and secure our Catalogue.

It is made with High Closet, Rolling Front, Six Holes, for Hard or Soft Coal; is the latest, best and handsomest Steel Range ever offered, one that you can offer as simply "out of sight" compared with that sold by the peddlers. Try it.

. . . THE . . .

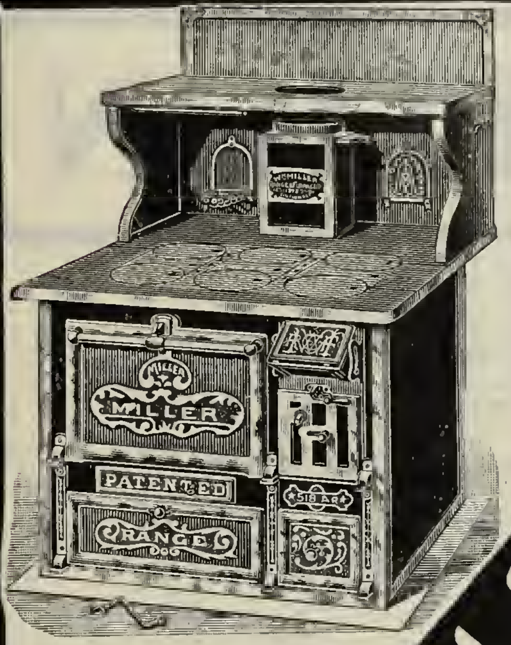
JOHN VAN RANGE CO.,

Warerooms :—419 ELM ST.,

Factories :—6-8-10 and 12 HOME ST.,

CINCINNATI, O.

THE JOHN VAN RANGE CO CINCINNATI, O
PACIFIC
PACIFIC THE J. VAN RANGE CO CIN. O.
PACIFIC RANGE PAT AUG 12 1873. PAT SEPT 26, 82.
THE VAN RANGE Co CIN'TI. O.



WITH Improved removable Duplex Grate, Improved Water Back for heating water, Flue Lined with Pure Asbestos Board, New Non-Warping Oven Bottoms, Cold-Handled Gravity Latch, Drop Oven and Feed Door, Patent Double Centers, Reguluating Damper, Nickel-Plated Towel Rod.

GEM-MILLER RANGES

Nickel Bands on doors are ventilated to prevent tarnishing, and body of Ranges is highly finished.

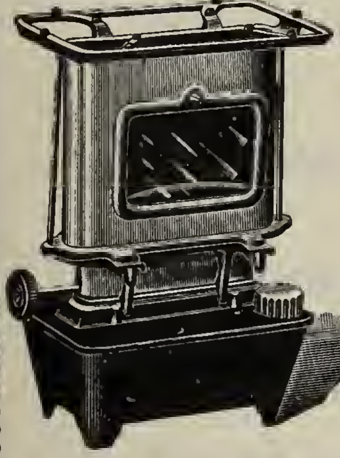
All bright parts Nickeled instead of Polished.

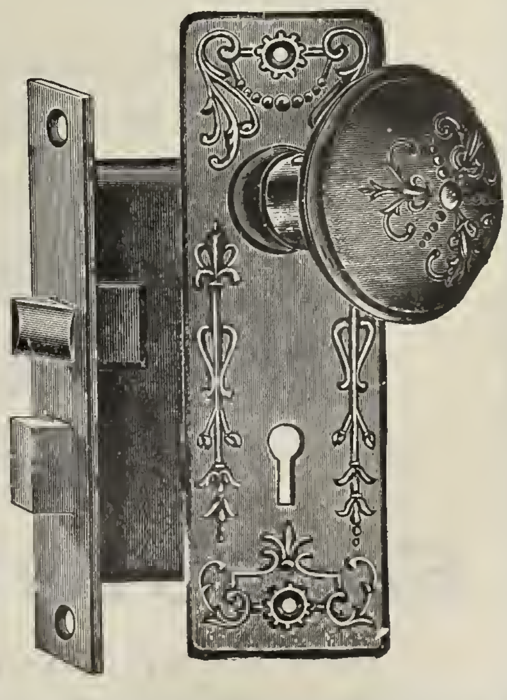
The
Wm. Miller
Range & Furnace Co.
125 and 127 E. Fifth St.
CINCINNATI, O.

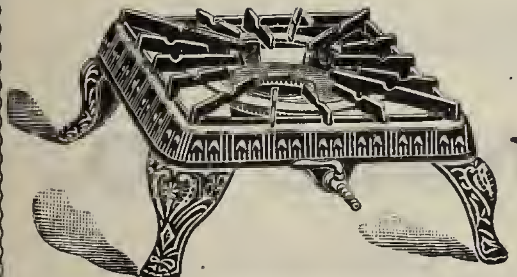
THE TAYLOR & BOGGIS FOUNDRY CO.,
MANUFACTURERS OF
LIGHT GRAY IRON CASTINGS.

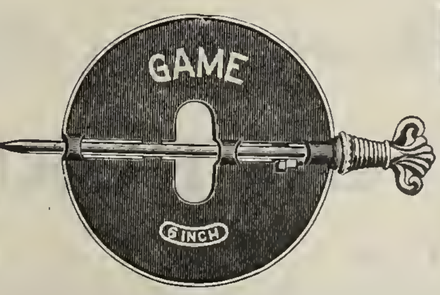
Builders' Hardware,
Dampers, Oil and Gas Stoves.
Furnace Lamps,
Molasses Gates,
Letter Boxes,
Hardware Specialties.
CLEVELAND, O.

" Hudson " Design.









OUR POSITION

The familiar story about the shield at the roadside and the two knights errant approaching it from opposite sides and exclaiming, the one: "It is silver!" and the other: "It is gold!" reminds one of Heating Apparatus.

We Manufacture

Hot Water Heaters,

Low Pressure Steam Boilers,

Warm Air Furnaces.

The advocates of each line swear by its merits. Perhaps, like the knights of the story, they are right.

Like a man who fixed a place for his neighbor's hens to lay, we enter no protest.

We manufacture all kinds of heating apparatus and we are in a *POSITION* to supply you with the most comprehensive line of each kind in the world.

Catalogues and Prices on Application.

The **BOYNTON FURNACE CO.,**

NEW YORK, CHICAGO.

THE H. B. SMITH CO.,

WESTFIELD, MASS., U. S. A.

Catalogue furnished only upon application to

Heating Contractors, Engineers and Architects

92 Pages. Size 9 x 12 Inches.

COTTAGE BOILERS.

STEAM BOILERS (8 SIZES), 550 SQ. FT. RADIATION SUPPLIED.
WATER BOILERS (8 SIZES), 900 SQ. FT. RADIATION SUPPLIED.

PACIFIC COAST AGENTS

HOLBROOK, MERRILL & STETSON,

SAN FRANCISCO, CAL.

EUROPEAN AGENTS

AUG. EGGERS,

BREMEN AND NEW YORK CITY.

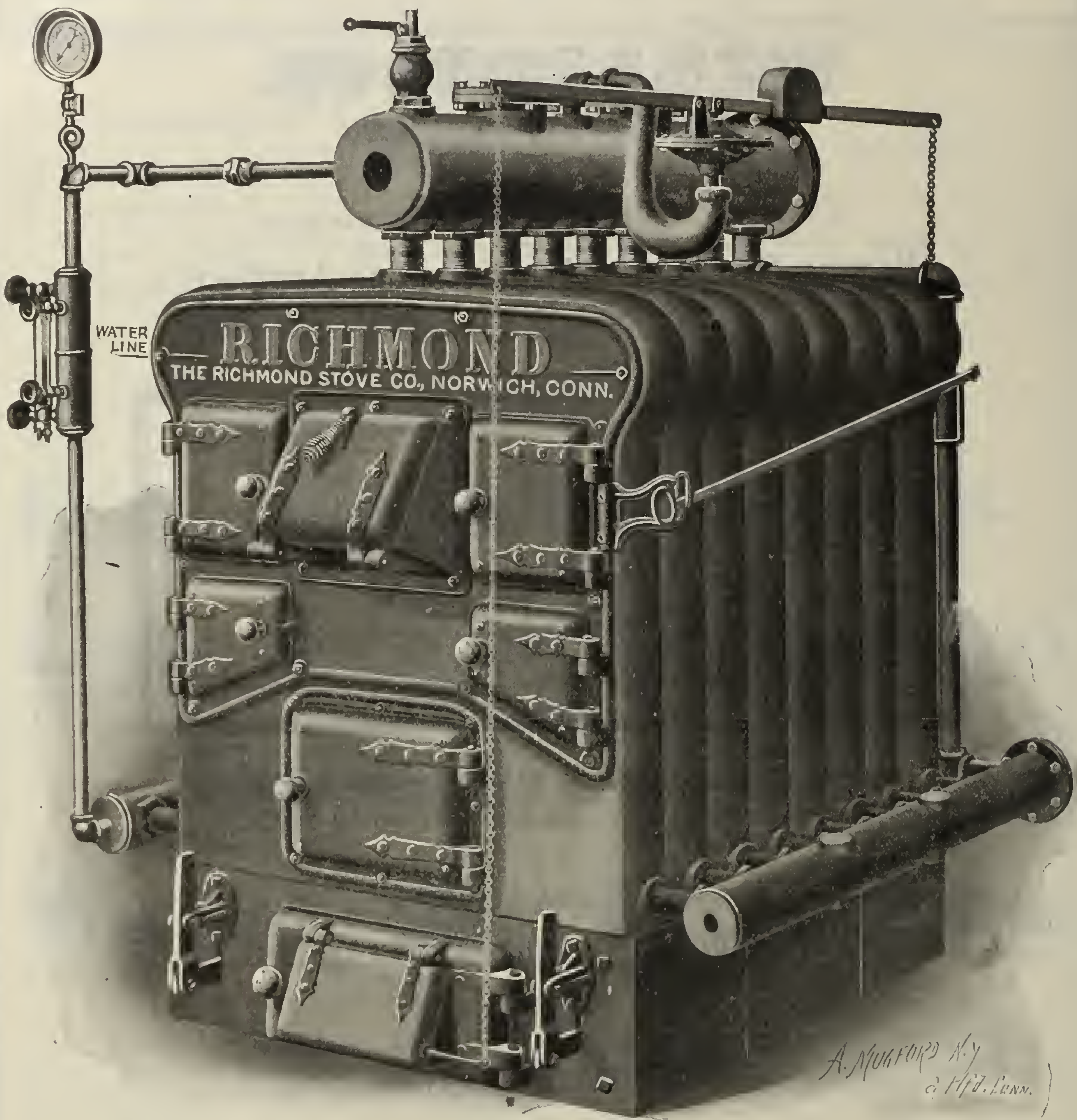
SALESROOMS:

THE H. B. SMITH CO.,

133 CENTRE STREET,
NEW YORK.

510 ARCH STREET,
PHILADELPHIA.

YOU WILL BE GLAD


WATER LINE
RICHMOND
THE RICHMOND STOVE CO., NORWICH, CONN.
A. MUGFORD N.Y. & HFD. CONN.

TO KNOW SOMETHING ABOUT THIS BOILER

It is Different. It is New.

It is the LATEST and BEST Boiler out.

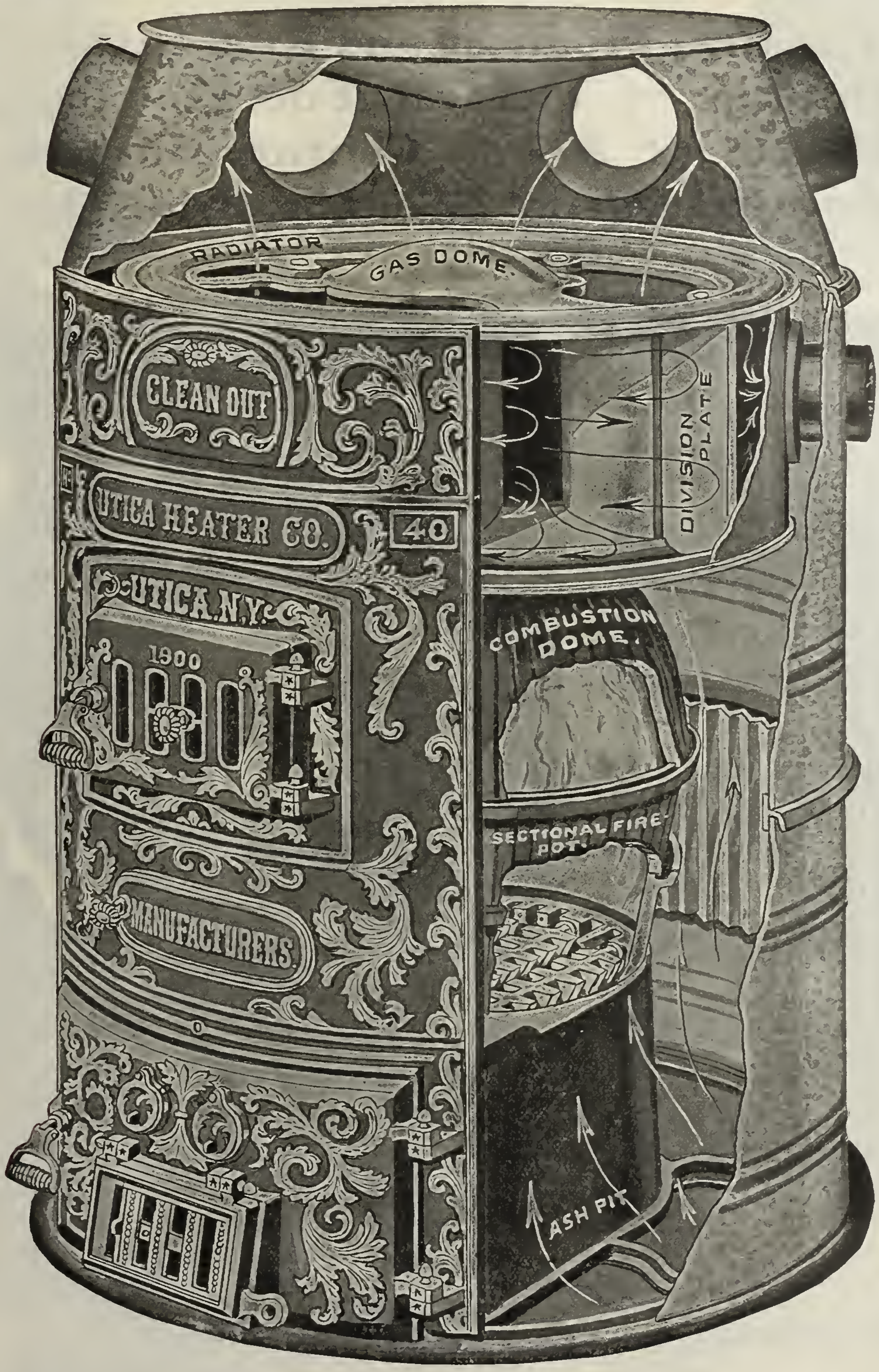
Send for Catalogue X. It will interest you.

THE RICHMOND STOVE COMPANY,

NORWICH, CONN.

NEW YORK: 737-38 Park Row Bldg
PHILADELPHIA: 18-24 S. 7th St.
PITTSBURG: 210 Ferguson Bldg.
CHICAGO: Chicago Heater & Supply Co.
ST. LOUIS: Rumsey & Sikemeier.

BUY THE BEST.



We are constantly making additions and improvements to our entire line of furnaces. SUPERIOR Furnaces and UTICA Heaters are as nearly perfect as it is possible to make any warm air furnace.

To say a furnace is thoroughly modern and up-to-date—and mean what you say—is half the selling argument.

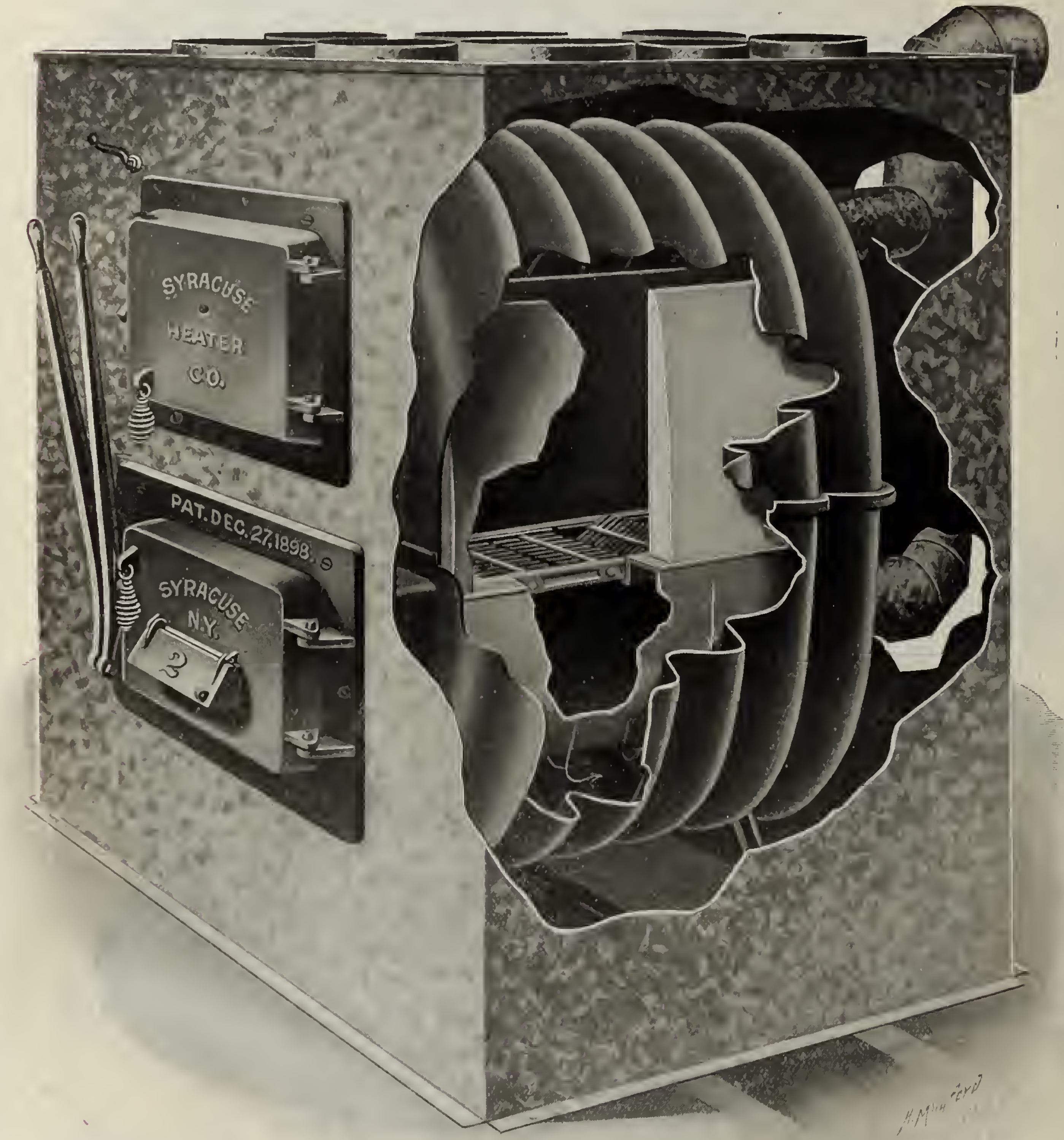
We would like to send YOU our catalogue and quotations.

UTICA HEATER COMPANY, Manufacturers, **UTICA, N. Y.**

NEW YORK OFFICE AND SALESROOM, 106 and 108 Beekman St.
CHICAGO HEATER & SUPPLY CO., 33 Dearborn St., Chicago, Ill.

SYRACUSE HEATER

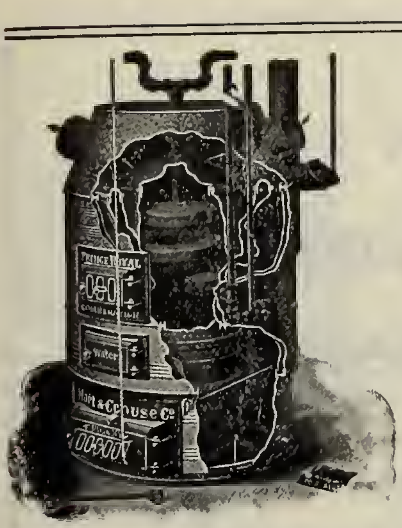
The Heat Producer and Fuel Saver of the Age. The Only Fuel Flue Base Heater. A 20th Century Surprise Constructed on Scientific Principles.


SYRACUSE HEATER CO.
PAT. DEC. 27, 1898.
SYRACUSE N.Y.
2

Sold and Guaranteed on Business Principles.

SEND FOR CATALOG.

SYRACUSE HEATER CO., SYRACUSE, N. Y.



Royal Heaters.

HART & CROUSE CO.,

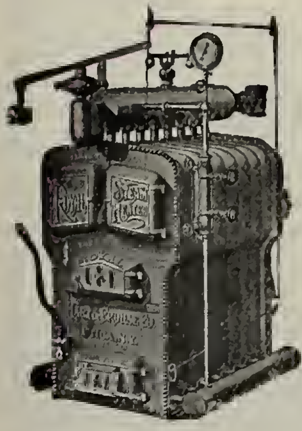
235 Water St.,
New York.

78 Lafayette St.,
UTICA, N. Y.

79 Lake St.,
Chicago.

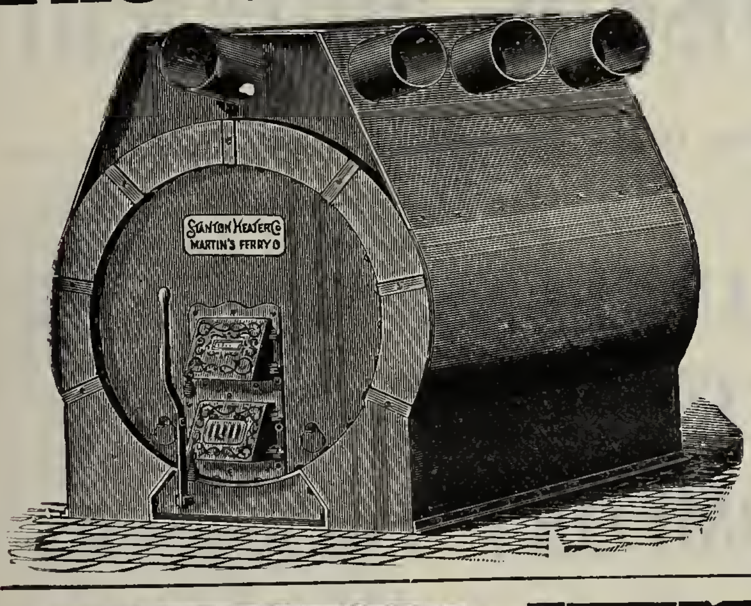
The Leading Line of Heating Apparatus.

HOT WATER.
STEAM.
HOT AIR.



The Stanton Seamless Heater,

PORTABLE CASED.



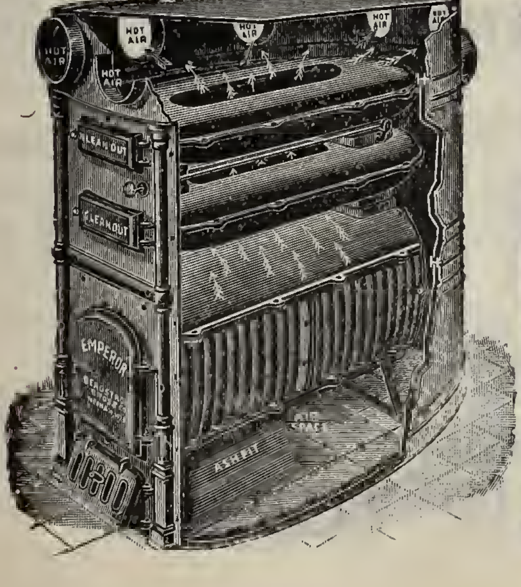
The cut herewith represents the ***Stanton Seamless Heater complete,*** with portable casing. The inside Casing Sheet is made of ***No. 24 cold rolled sheet steel.*** The outside casing is made of ***No. 24 Aluminum-coated sheet steel,*** which is anti-rust and will stand a much higher degree of heat than it will ever be subjected to before tarnishing. Heavy asbestos paper is placed between inside and outside casing, which prevents heat from radiating into cellar. ***This coating will not peel off,*** but remain pretty and white.

SEND FOR CATALOGUE.

THE STANTON HEATER CO.,

Martin's Ferry, Ohio.

See Our Advertisement Next Week.



Emperor Furnaces

FOR WOOD.

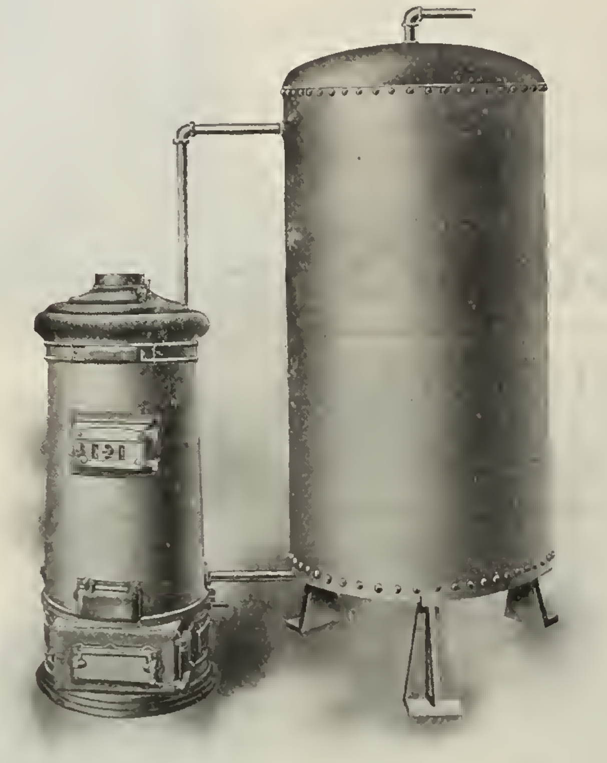
Simple, Safe, Durable. Economical in Fuel.

The Best and Cheapest Line of Wood Furnaces. . . .
Furnished for either Brick or Galvanized Iron Casing

SEND FOR CATALOGUE.

Bergstrom Bros. Co.

NEENAH, WIS.



Ideal Premier Tank Heater.

Our New Ideal Premier Tank Heater

is now ready for the market, and we invite your critical examination of its various features of construction.

Send for 1902 profusely illustrated catalog.

AMERICAN RADIATOR COMPANY

Lake and Dearborn Streets,
Chicago, U. S. A.

New York. Philadelphia. Buffalo. St. Louis. Minneapolis. Denver.

A Word to the Wise is Sufficient!

HERO.

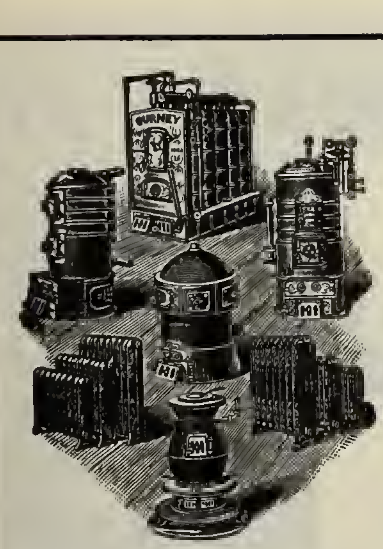
The **Wise Dealer** should keep in mind **these words,** viz:

FAULTLESS Furnaces,
HERO Furnaces,
COMFORT Furnaces,
RIVAL Furnaces.

They speak for themselves, and have been **talking** for years in many places. If **YOU** have not heard from them, now is the time to give them a chance

The GRAFF FURNACE CO.,

MANUFACTURERS,
208 WATER ST., NEW YORK.



YOU NEED THEM.

Some one has said "We need all and all need us." We're sure you need

"GURNEY" HEATERS, **Bright Idea, Doric and 400 Series,**

if you would make the most of your business, because the "Gurney" possesses those attributes which appeal strongest to heater buyers; the ability to cut down the coal bill, to furnish the largest amount of heat possible from the fuel consumed as well as the ability to wear several years longer than other heaters.

You may not be able to get business with some heaters, but the dealers who handle the "Gurney" never have any trouble. Weigh this fact carefully, then write for particulars relative to an agency.

Gurney Heater Mfg. Co.,

74 FRANKLIN ST., BOSTON. 111 FIFTH AVE., NEW YORK CITY.

Western Selling Agents, James B. Clow & Sons, 358 Franklin St., Chicago, Ill.

Bengal Furnace

It Is All Cast Iron
Low in Price
Adapted to All Cellars

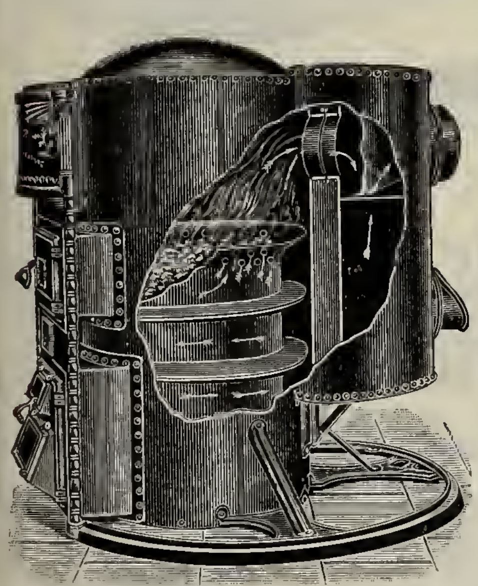
It Will Reduce coal bills
Please your customers
Do all we claim

It Won't Rust out
Disappoint
Heat the chimney

Are You a BENGAL Agent?

EASTERN SELLING AGENTS:
GURNEY & CO.,
Washington, Hanover and Elm Streets, Boston, Mass.

FLOYD, WELLS & CO., Royersford, Pa.
NEW YORK OFFICE, 210 WATER ST., R. W. HILLMAN, Manager.



WEIR ALL STEEL GAS AND SOOT CONSUMING FURNACE.

THE HEAVIEST STEEL FURNACE MADE.

Absolutely gas and dust tight. A great heat-producer but a fuel saver.

MANUFACTURED BY
THE MEYER FURNACE CO.,
1300-1304 S. Washington St.,
SEND FOR CATALOGUE. PEORIA, ILLS.

F.M.&B.Co. PEORIA ILL.
F.M.&B.Co. PEORIA ILL.

"The Handy Furnace Pipe."

MADE WITH A VIEW OF BEING SAFE.

The saving of labor in putting it up really makes it the cheapest hot air pipe on the market.

MANUFACTURED BY
F. MEYER & BRO. CO.,
SEND FOR CATALOGUE. PEORIA, ILLS.

STOVE REPAIRS

Bought from us entitle the purchaser to a 1000 Mile Book FREE on any railroad.

HAVE YOU RECEIVED ONE OF THEM? WRITE FOR PARTICULARS.

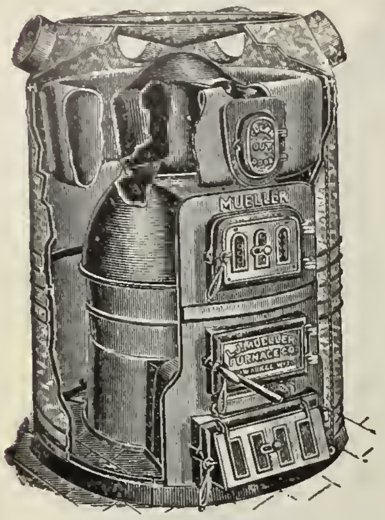
HEADQUARTERS FOR
WICK RINGS
For all Blue Flame Oil Stoves made—at startling low prices.

ELECTRIC BLUE FLAME COOKS
Are what you want for Summer trade.

CHAS. C. HEATH & CO., - - Philadelphia and Baltimore.

Would Like to Interest You

IN


MUELLER
L. J. MUELLER FURNACE CO.

For Hard or Soft Coal.

MUELLER

Furnaces and Boilers

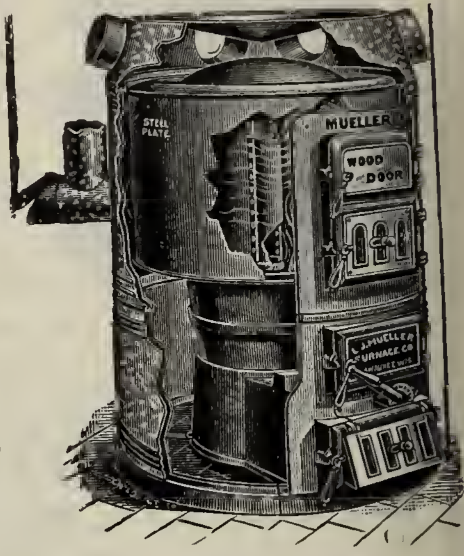
BEST LINE MADE

All Styles—For All Kinds of Fuel.

WRITE FOR CATALOGUE AND PRICES.

EVERYTHING IN THE HEATING LINE.

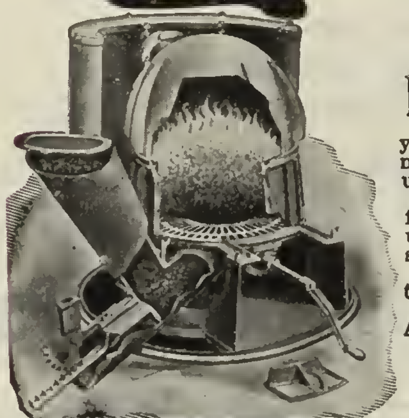
Established 1857.



For Wood or Coal.

L. J. MUELLER FURNACE CO.,

190 Reed Street,
MILWAUKEE, WIS.



IF YOU ARE NOT SELLING THE

Peck=Williamson Underfeed Furnace

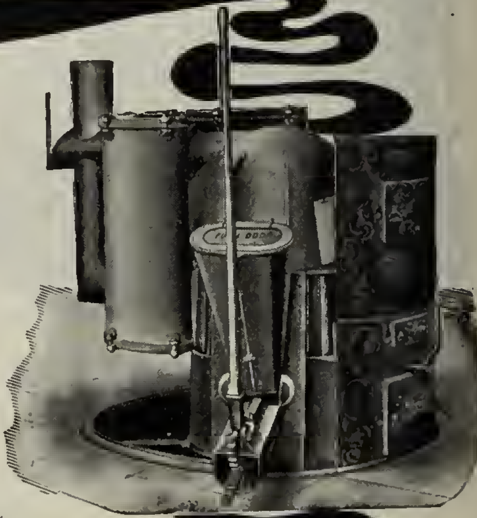
you have not the trade and are not making the money you might Just a pull or two of the lever feeds the new coal from underneath.

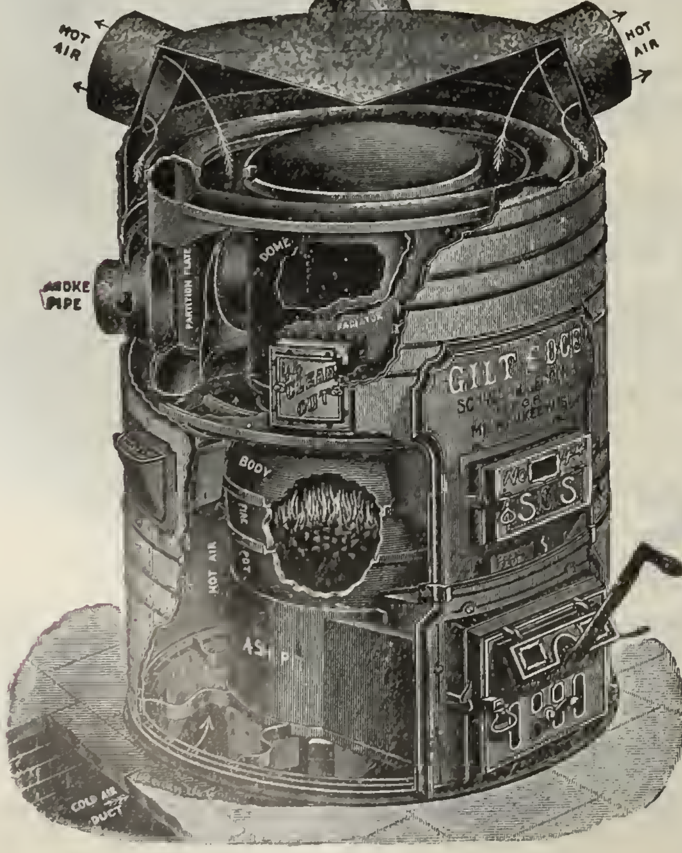
The Underfeed Furnace consumes less fuel than any other furnace ever built. The coal is burnt more slowly All the heat units from it, as well as from the smoke, are utilized and all smoke eliminated.

Our handsome booklet explains its splendid heating qualities and coal saving.

You may have this booklet and our special plans for selling. Ask for booklet about our Laundry Dryer also.

THE PECK-WILLIAMSON COMPANY,
CINCINNATI, OHIO.





Gilt Edge Warm Air and Combination Heaters

have merits that are all their own. They are made in a large variety of styles and sizes, each adapted especially to a certain class of fuel. Our line is "gilt edge" in every sense of the word. Every furnace we make is correctly made in accordance with right principles, and the price is right. Kindly write us for catalogue.

R. J. Schwab & Sons Co.,

Milwaukee, Wis.

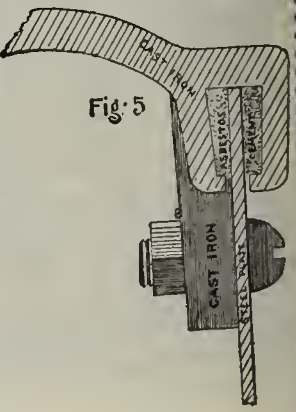


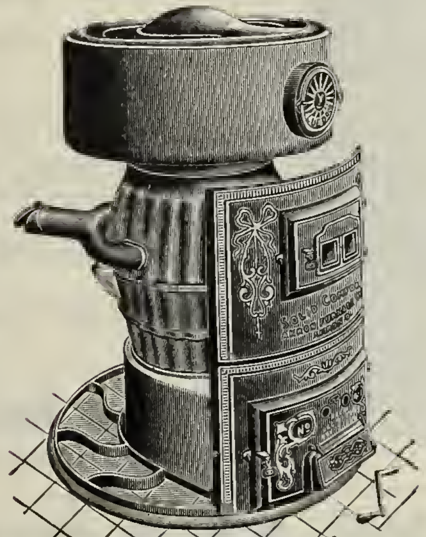
Fig: 5

Patented.

The Keystone Joint used on Gilt Edge Furnaces is the only permanent gas-tight steel and cast iron joint on the market.

SOMETHING NEW

SOLID COMFORT FURNACE



New Catalogue Now Ready. Send for it.

Send for Prices.

MANUFACTURED BY
AKRON FURNACE CO.
AKRON, OHIO.

SELLING RAPIDLY

High in Grade

Do You Want the AGENCY? Send us your name on a postal.

Low in Price

The Haxtun
Defender
Great Northern
The Superior
Tabasco

DON'T

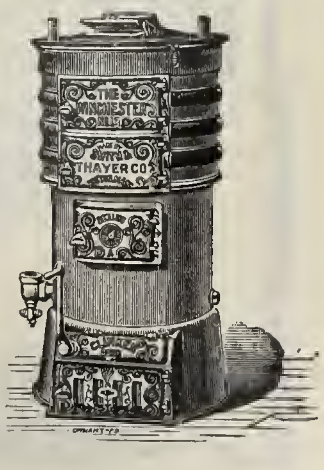
look any further if in search of boilers for steam heat or hot water. The list opposite contains the standards. Send for catalog and get acquainted with them.

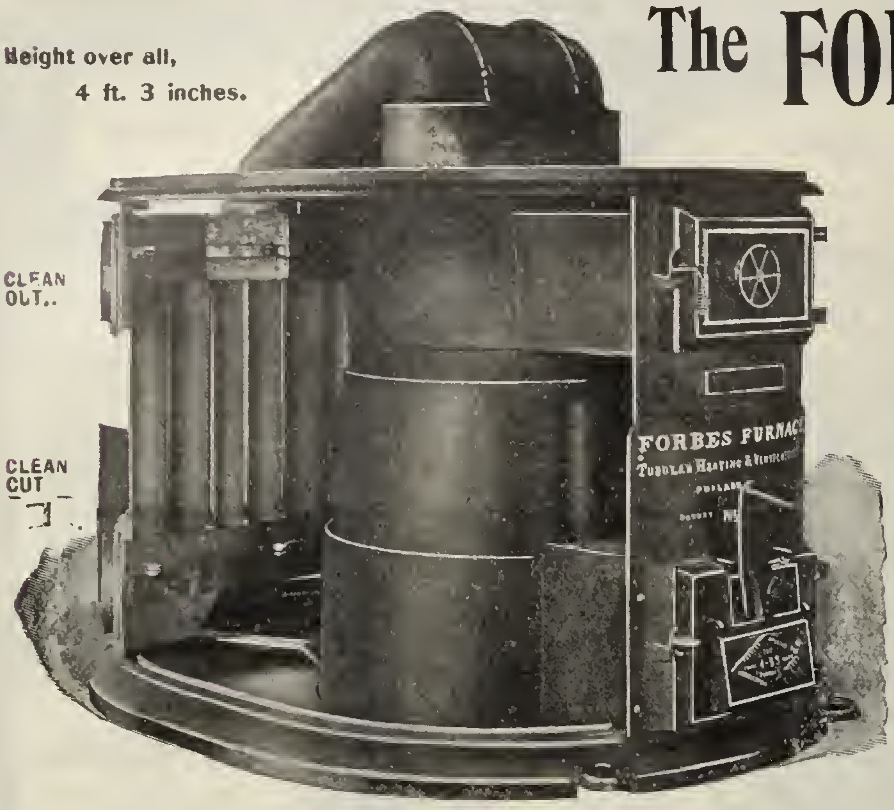
KEWANEE BOILER COMPANY
KEWANEE, ILLINOIS.

WINCHESTER

Some heater salesmen remind us of the man who showed his reverence for truth by keeping a respectful distance from it. It was necessary, we suppose. How much better it would be to sell a heater like the "WINCHESTER," which speaks for itself and always speaks the truth. For steam or water heat, and made by SMITH & THAYER COMPANY, Boston, Mass.; 106 Beekman Street, New York.

HEATER.





The FORBES FURNACE.

You run no risk in putting in the

Forbes Furnace.

When properly installed we guarantee them in every case.

They are constructed entirely of cast iron.

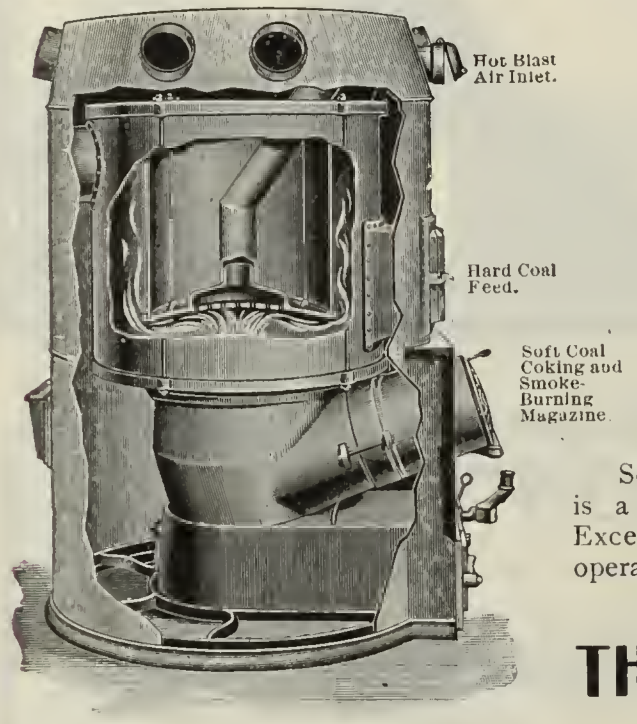
No sheet iron drums.

Our radiating tubes are ⅛ in. thick, and will wear for years.

Specially suited for low cellars.

SEND FOR CATALOGUE AND FULL PARTICULARS.

Tubular Heating & Ventilating Co.,
228 Quarry St., Philadelphia, Pa.


Hot Blast Air Inlet.
Hard Coal Feed.
Soft Coal Coking and Smoke-Burning Magazine.

THE PATRIC FURNACE

IS A COMBINATION OF

GOOD THINGS

For the Dealer and User

Scientific and Simple in construction. The Coking and Smoke-Burning is a trade-winner. Very economical. Has an efficient Hot-Blast. Exceedingly durable. A success for 29 years. Easy to sell. Easy to operate. Easy to install.

Let us send you a catalogue that tells you all about it.

THE PATRIC FURNACE COMPANY,
SPRINGFIELD, OHIO.

FURNACES

EXCELSIOR HEATING SPECIALTIES

PIPE

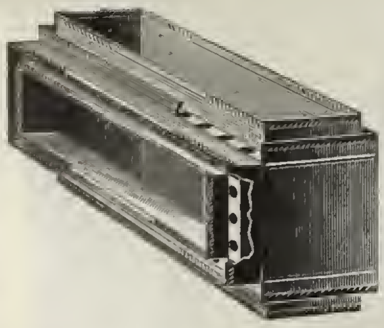
WE ARE MAKING

Very Low Prices

on our full line for present and future deliveries and solicit

Your Inquiries

Our Stove Pipe and Elbows, also Furnace Pipe are the Best made.



THE EXCELSIOR PARLOR ELBOW.

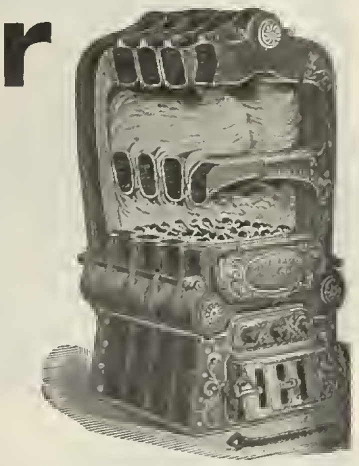
ELBOWS

EXCELSIOR STEEL FURNACE CO.
38-40 W. MONROE ST.-CHICAGO.

REGISTERS

The NEW WALKER Boiler

FOR STEAM—FOR WATER.



We present this week a sectional view of our **15 Series Walker Boiler.** It is made for both Steam and Water Heating, and we have it in five sizes, with capacities from 400 square feet to 900 square feet for Water and from 240 square feet to 540 square feet for Steam.

This Boiler is simple, strong and serviceable; has a deep fire box and carries a fire 12 hours without attention. Just the Boiler for the "Homes of the People."

These Boilers Sold at "Honest Ratings."

WRITE FOR CATALOGUE No. 31.—Just Out.

WALKER & PRATT MFG. CO., . Boston, Mass.

Finest Factory in this Line in the World.

S. L. FARRAR
PLUMBING AND FURNACE HEATING.

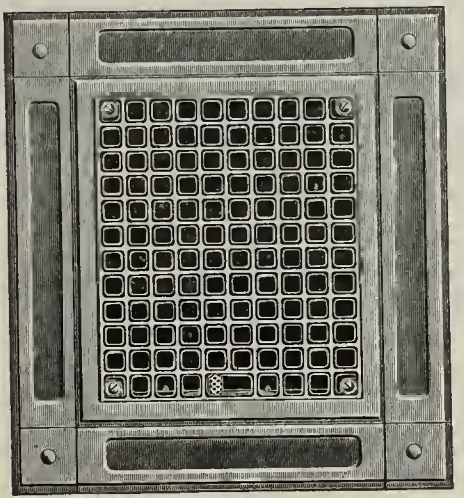
Dighton Furnace Co., Bath, Me., May 5, 1902.

Gentlemen: Yours of April 28th at hand, and in reply will say that I put in last fall four 22-inch fire pot "DIGHTON" Furnaces, and all worked satisfactorily. I have interviewed all of the users, and the greatest amount of coal used was four tons, the lowest three tons, and all speak well of them.

If I sell any furnaces this summer or fall I shall certainly use the "DIGHTON," and if, when I examine my own furnace this spring, I find it in bad repair, shall put a "DIGHTON" in my own house.

Yours Respectfully, S. L. FARRAR.

H. & C. WROUGHT STEEL REGISTERS



FURNISHED WITH WROUGHT STEEL or WROUGHT BRASS FACE PLATES, AND IN ALL FINISHES.

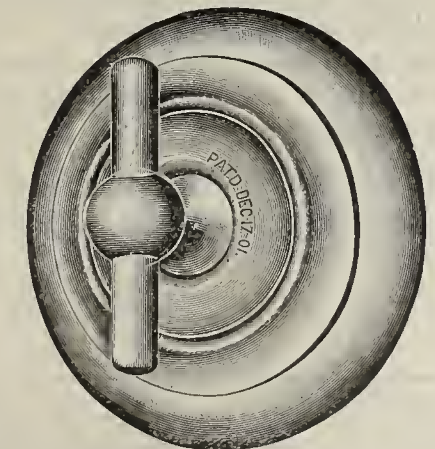
STRONG, LIGHT, HANDSOME in SIMPLICITY of DESIGN.

GENERAL SALES AGENTS
STANLEY WORKS
New Britain, Connecticut.

THE HART & COOLEY CO., New Britain, Conn. 79 Chambers St., New York. 19 Lake St., Chicago.

SOMETHING NEW.... SHEET STEEL DRAFT REGISTERS.

PATENTED DEC. 17, 1901.



Threads are cut and disk is securely fastened *Without cotter pins or washers,* Yet it is loose or tight as wanted.

SEND FOR PRICES.

STOCK SIZES.

2½ in.	4 in.
3 in.	4⅛ in.
3¼ in.	4½ in.
3½ in.	5¼ in.
3¾ in.	

Any size made to order in quantities.

Manufactured by *The* **H. A. MATTHEWS MFG. CO., Seymour, Conn., U. S. A.**

STAR STOVES AND RANGES
ENTERPRISE STOVE CO. VINCENNES, IND.
GUARANTEED

OUR
CATALOGUE,
SHOWING

GAS RANGES
CAST RANGES
STEEL RANGES
STEEL COOKS
HOT PLATES
CAST and STEEL
HEATERS

WILL BE FURNISHED FOR THE ASKING BY
Enterprise Stove Co., VINCENNES, IND.

REFRIGERATORS,
BLUE FLAME OIL STOVES,
GASOLINE STOVES.

LARGEST JOBBERS
in
NEW ENGLAND.

GAS RANGES,
FURNACES, STOVES,
RANGES AND REPAIRS.

HENRY N. CLARK CO., 56 and 58 UNION ST., **Boston, Mass.**

BRAND STOVE CO.

STOVES, RANGES and
FURNACES.
SEND FOR CATALOG.
MILWAUKEE, WIS.

"Built to Bake."

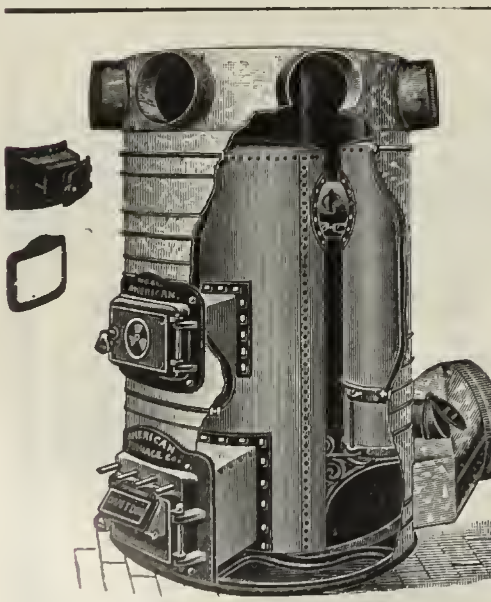
Household Ranges.

There's satisfaction in selling Household Ranges.
Satisfaction to the dealer and to the customer.

If you're not a Household Agent, write to-day for Catalog.

THE WHITE, WARNER CO., - **Taunton, Mass.**

Look for the Union Label.



Burn Hard or Soft Coal, or Coke. Large Doors

Some Ripe Experience

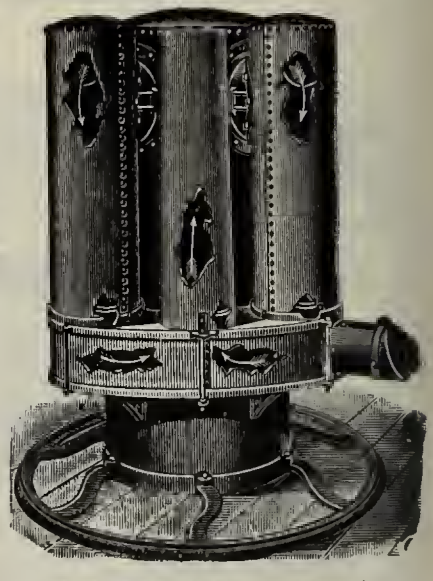
Has come to us through watching the doings of dealers throughout the United States.

We find that the dealer who sells cheap furnaces not only loses ground in the furnace business but also has a falling off in his other lines.

On the other hand, we can say that the man who sells a good furnace and charges enough to do a good job will, in a few years, be the leading furnace man in his town and at the same time build up his other business.

The *American Furnace* is made for the better class of trade; is durable, clean and economical in fuel.

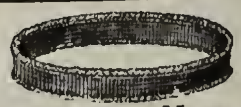
The American Furnace Co.,
1911-13 PINE STREET, ST. LOUIS, MO.



Large Radiators, easy to clean out

Write for prices and secure the agency before the other fellow gets it

STARTING RINGS For All Kinds of BLUE FLAME STOVES.
Small size, 40c. per doz. Medium size, 55c. per doz.
Large size, 75c. per doz.



In ordering mention diameter of rings and name of stove.

THE S. M. HOWES CO., 40, 42, 44, 46 Union Street, Boston, Mass.

STAMFORD FOUNDRY COMPANY

MAKERS OF

RANGES COOKING AND HEATING STOVES
HOT-AIR AND COMBINATION AIR AND
WATER FURNACES
LAUNDRY STOVES CONFECTIONERS' STOVES
CABOOSE RANGES ETC ETC

STAMFORD CONN

BOSTON GAS COOKER.

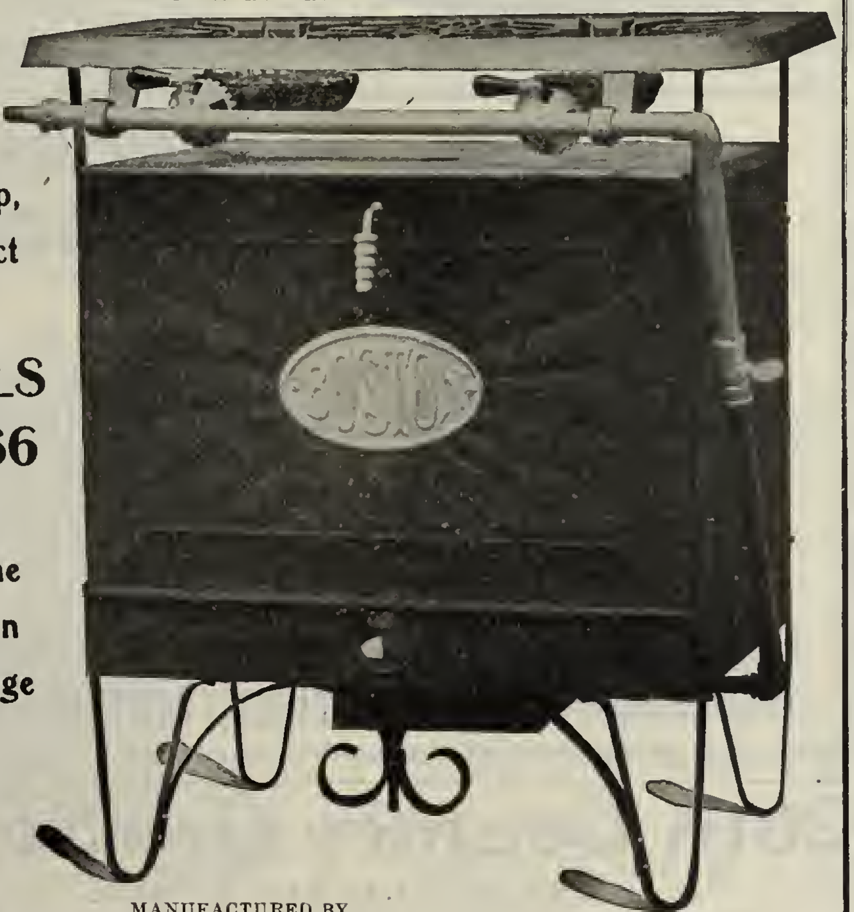
Low Priced, But Not Cheap.
OVEN 12 x 17 x 12 INSIDE.

One Extra Large Top Burner. Flush Top, A Perfect Baker.

RETAILS FOR $6

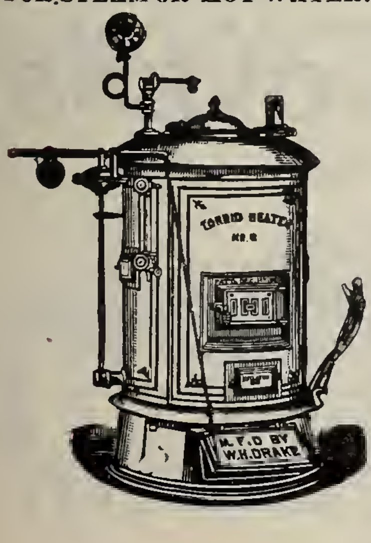
and gives the dealer an extra large profit.

SEND FOR PRICE.



MANUFACTURED BY
THE S. M. HOWES CO., 40, 42, 44 and 46 Union St., **BOSTON, MASS.**

"TORRID HEATER."
FOR STEAM OR HOT WATER.

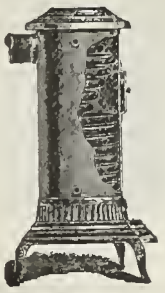


It is Practical in Design.
It is Safe, Being Tested to 200 Pounds.
It is Easy to Manage and Keep Clean.
It is Durable.
It is Sectional and Easily Handled.
It has No Packed Joints.
It is Self-Feed or Surface Burning.
It has the Torrid Patent Rocking and Dumping Grate.
It is Low in Price.

SEND FOR CATALOGUE.

MANUFACTURED BY
W. H. DRAKE, No. 36 Clinton St., NEWARK, N. J.
Factory: Hackettstown, N. J.

HOT WATER AND HOT AIR



HEATINGBY COMBINATION STOVES AND FURNACES.

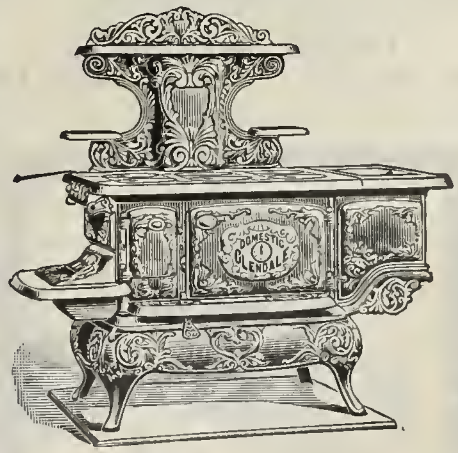
Suitable for Large or Small Houses, Stores, Conservatories, Barber Shops, Hotels, etc., etc.

Heat Water Quickly.
Circulation is Positive.
No Joints Inside to Leak.

THE NATIONAL PIPE BENDING CO
160 RIVER ST., NEW HAVEN, CONN.

GLENDALE

Stoves and Ranges



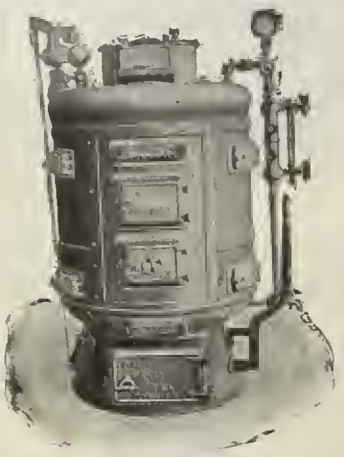
Manufactured by
SOMERSET STOVE FOUNDRY CO.,
SOMERSET, MASS.
Send for a Sample.

SCRANTON CORUNDUM & EMERY WHEEL CO.
1311-1315 Capouse Avenue, SCRANTON, PA.
Write for Catalogue.
OUR "BLACK DIAMOND"
artificial abrasive wheels are especially adapted for
The Stove Trade
THEY ARE THE BEST

Pierce

BOILERS and RADIATORS

for Steam and Water Heating.



Pierce Touraine Steam Boiler.

LARGE HEATING CAPACITY.
ECONOMIC IN FUEL CONSUMPTION.

Endorsed by the foremost Architects and Heating Engineers.
Write for New Illustrated Catalogue.

Pierce, Butler & Pierce Mfg. Co.,
Syracuse, N. Y.
New York. Boston. Philadelphia.

The Champion Hot Water Combination Heaters.

They Fit Any Furnace.

Base section when used without ring sections.

Ring Section

These Heaters are made in five sizes diameter, and from 100 to 700 square feet radiation capacity.
Will heat those cold rooms or an addition to the building. Will increase the capacity of any furnace. Are cheaper than coils and will do more work.
Write for new circular. Manufactured by

FRANK D. STOLZ,
115 Lake St., Chicago, Ill.

A B C

PURE AIR.

Placing it where you want it, when you want it and in the largest possible quantities at the least expense, is what is guaranteed in the service of

A. B. C. DISC VENTILATING FANS.

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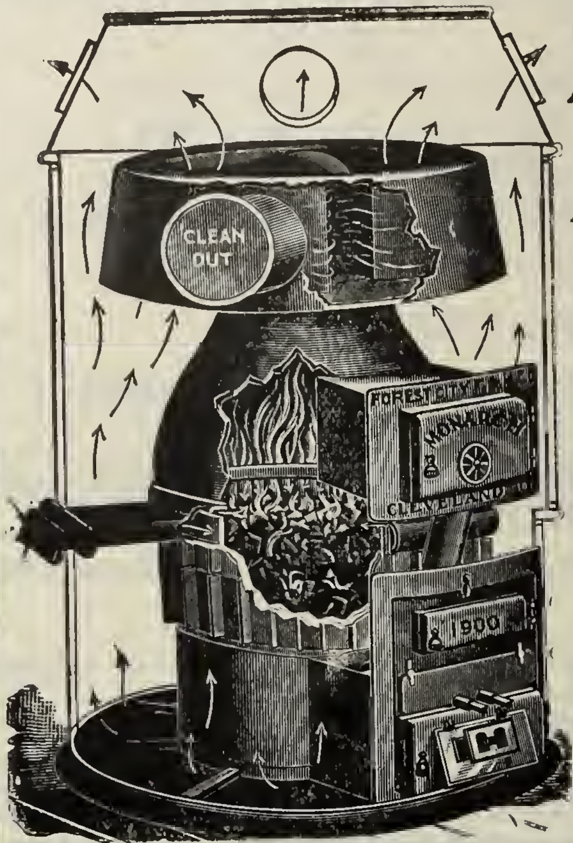

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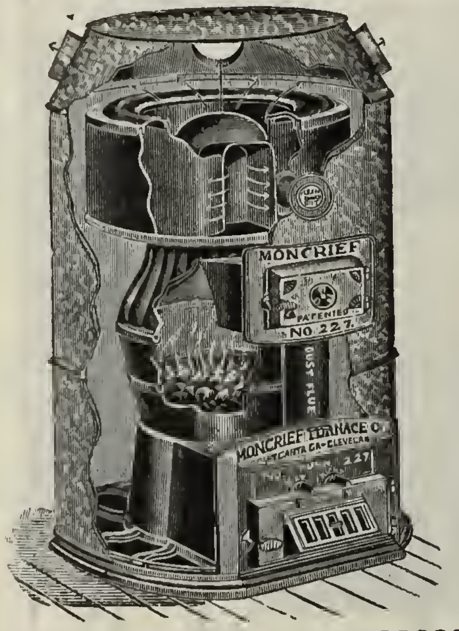

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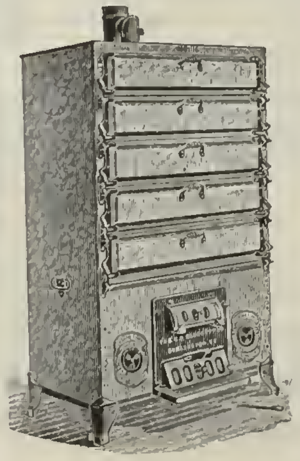

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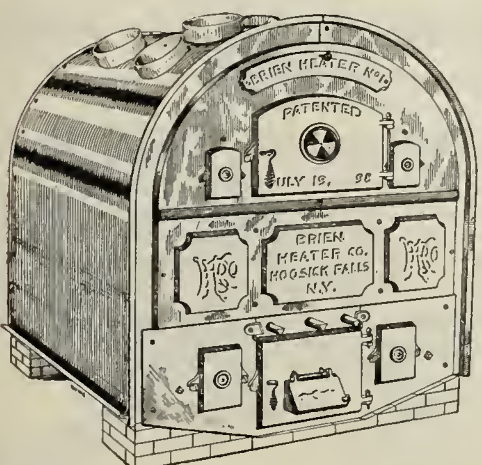
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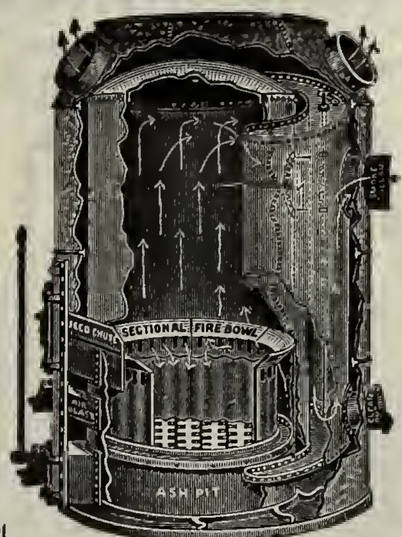

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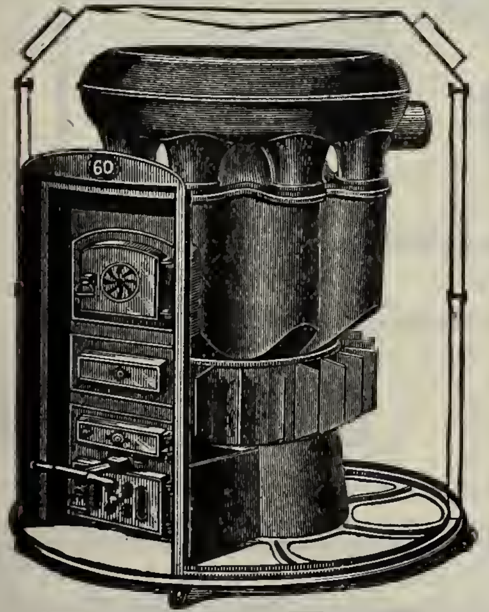

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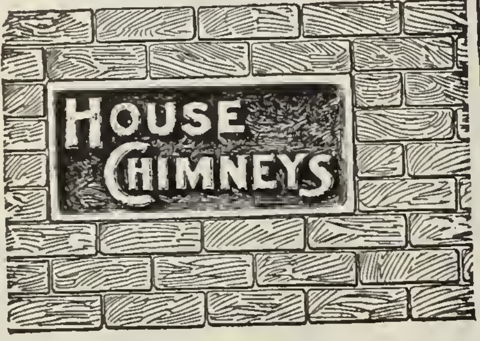

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REMEDYING DOWN DRAFT IN CHIMNEY · · · · 49–51

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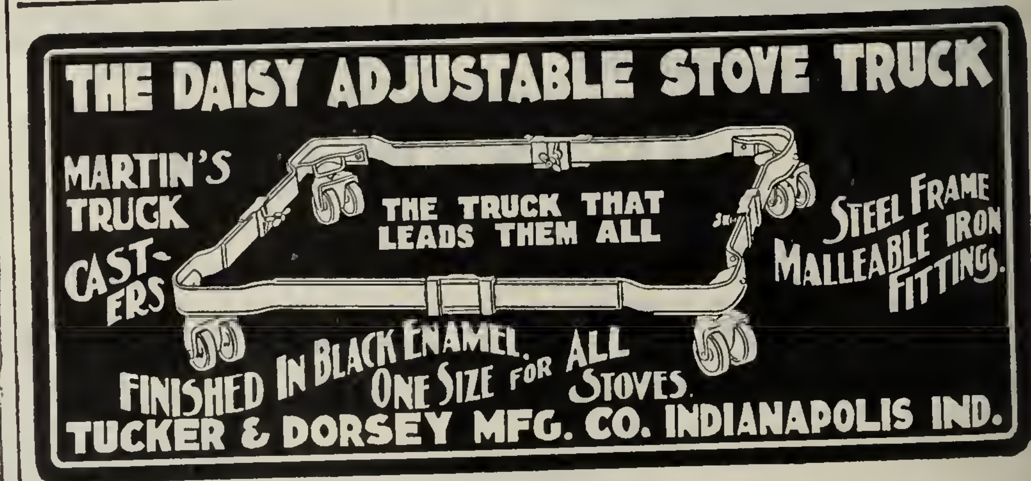
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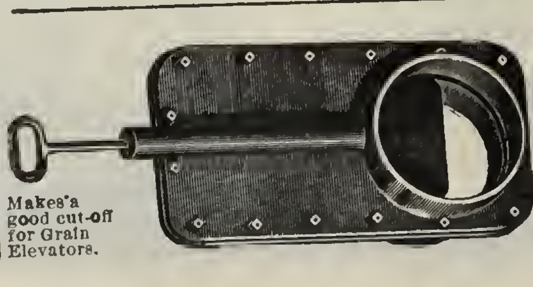
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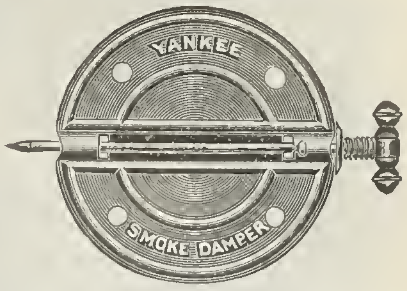

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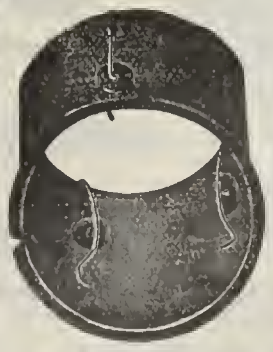

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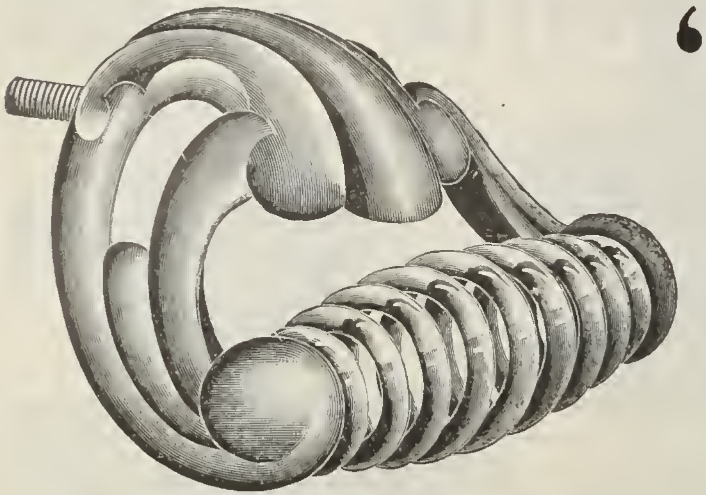

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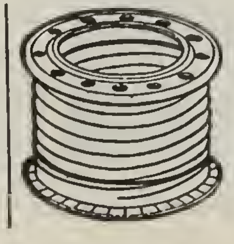

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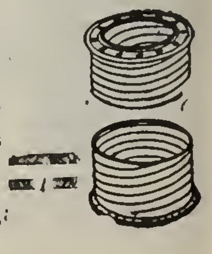

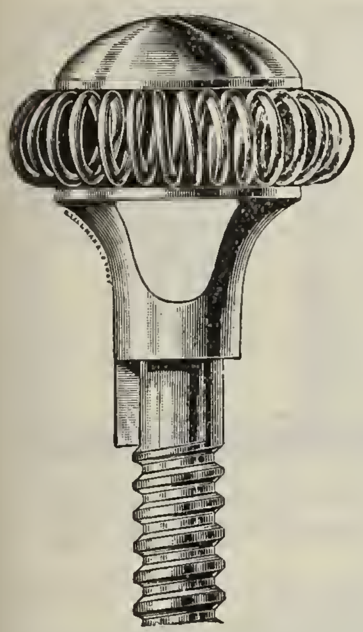

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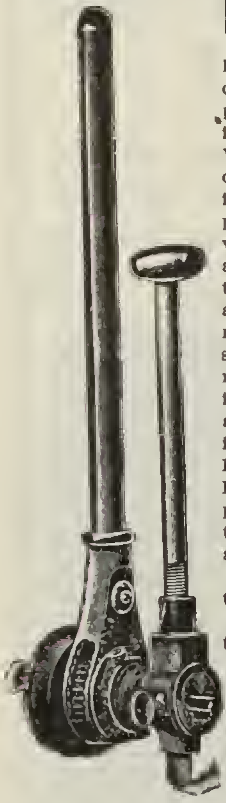
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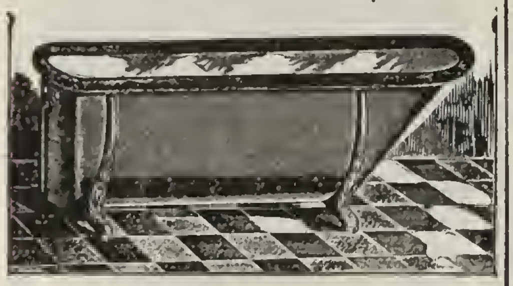
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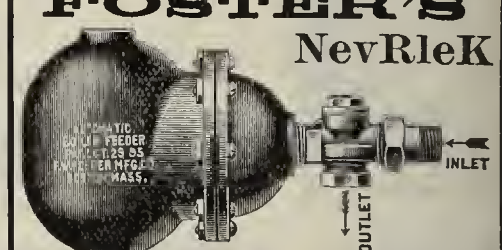

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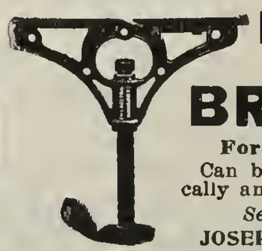
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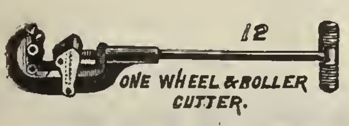

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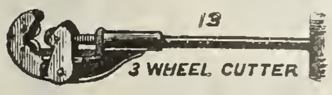

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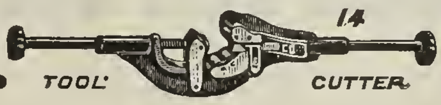

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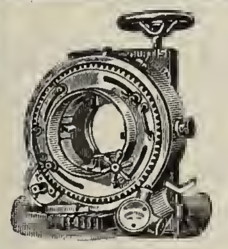

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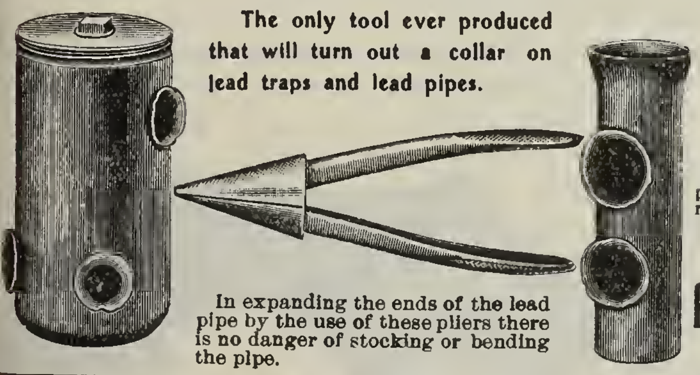

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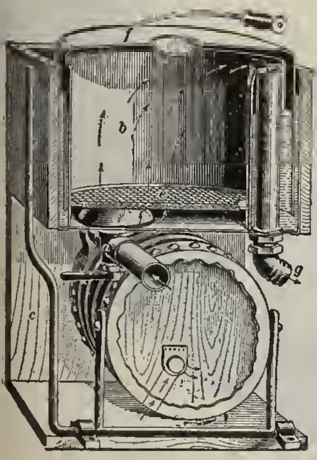

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NEW YORK AND CHICAGO.

New York, May 17, 1902.

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The Stove Manufacturers.

The annual gatherings of stove manufacturers, which have taken place in various cities for more than three decades, have attracted less public attention than the meetings of the representatives of numerous minor industries. The manufacture of stoves is one of the oldest of our industries. As the country has been filling up with an increased population, stove foundries have sprung up close in the wake of the pioneer wherever fuel and iron could be advantageously secured. The result is that there are now a large number of stove manufacturing plants all over the country, representing the investment of an immense amount of capital and employing no small proportion of the working men of the country. This branch of the trade has been conducted with a freedom from friction which redounds greatly to the credit of those engaged in it. Since the organization of the National Association of Stove Manufacturers, the conflict of interests has been superseded by methods which have cemented the relations of all concerned, from the retail dealer to the manufacturer and his employees. Not the least important outgrowth of the National Association is the Stove Founders' National Defense Association, whose representatives meet periodically with a committee of the stove molders, and by wise measures have for many years avoided labor troubles. Their meeting in New York City this week has been largely attended, and the deliberations have closed with the same evidence of satisfactory results that has characterized the meetings in the past. That the representatives of such an important industry could meet with so little stir, so far as the general public is concerned, reflects creditably upon the confidence reposed in those who direct the operations of this great branch of business.

Pig Iron Production Still Increasing.

The monthly satistics of pig iron production published by *The Iron Age* show that the blast furnace capacity of the country has undergone another substantial increase during April, largely due to the starting of a number of furnaces in the East and in the South. The majority of these stacks serve the foundry trade, the production of the plants running on pig iron for steel purposes having already reached the present maximum. One very interesting fact is brought out by these latest statistics, and that is that for the first time in the history of the industry the enormous output of over 1,500,000 gross tons has been reached in one month, the exact figures being 1,503,326 tons. Notwithstanding this tremendous output, stocks of pig iron have further declined and are now at the lowest point reached in many years. The available furnace stocks on May 1 are given at 83,859 tons. This figure does not include the stocks now in hand of the steel works, but these also are said to have declined to relatively insignificant figures. If nothing happens to disturb the regular running of the furnaces, and if the old stacks now getting ready and the new ones building get into line, as expected, a production of 18,000,000 tons may be reached this year, in spite of the fact that that rate was not attained during the first quarter. The weekly productive capacity of the active furnaces on May 1 was 352,064 tons, as compared with 337,424 tons on April 1, 323,028 tons on March 1, and 301,125 tons on May 1, 1901.

A marked scarcity of pig iron continues and there are reports of foundries and mills closing down on that account. With the current scarcity of the raw material much attention is being given to the possible relief which is to come through the entry into the market of new stacks. A list of furnaces that are either likely to, or may, go into blast during the current year, given by *The Iron Age*, shows nine new stacks. Figuring conservatively, these may possibly add 300,000 tons to the production of the country for 1902. From present indications it looks as though the year 1903 would witness the starting of at least eighteen furnaces, the majority of large capacity. Of these quite a number will be making iron during the first half of next year. Roughly, it is estimated that furnaces which will start this year will produce about 3100 tons daily, and that the plants which are expected to go into operation in 1903 will reach a daily product of about 5500 tons, exclusive of seven prospective furnaces for the United States Steel Corporation and the Cambria Steel Company, which have not been taken into the account. It is possible that if these latter should be pushed and started into operation 3000 tons more per day might be added to the productive capacity of the country at the end of the year 1903. In other words, we may, in the fall or winter of 1903, find our productive capacity swollen by about 11,600 tons a day, or by 4,000,000 gross tons a year. This would indicate a possibility of entering 1904 with over 21,500,000 gross tons capacity per annum.

The West Indian Calamity.

Once in a great while occurs some overwhelming catastrophe which so overshadows all other events of the period as to make an epoch of its own. A calamity of this nature shocked the whole civilized world in the past week when the news was received of the cataclysm that had overwhelmed the city of St. Pierre in the island of Martinique. This disaster is the most destructive convulsion of nature that has visited the earth for a century and a half. The awful suddenness of a volcanic eruption which could almost instantaneously overwhelm and annihilate a city of 30,000 inhabitants and devastate miles of country can scarcely be realized. The further news that volcanic disturbances of a serious character, involving the loss of thousands of lives and an immense amount of property, have occurred in the British West India island of St. Vincent, with threatening of similar outbreaks in other contiguous portions of the chain of islands in the Caribbean Sea.

emphasizes the immensity of this latest outbreak of natural forces. We hear much in these days of the triumphs achieved by man over the forces of nature; but in the presence of such a catastrophe as this such boasting must be silenced. The brightest feature of the situation is the promptness with which the practical sympathy of the world has gone out to the suffering and starving people of Martinique. Supplies of money, clothing, food, medicines and all other necessaries are being rushed to the scene of disaster with the utmost rapidity possible. Prompt response has been made by the Congress of the United States to the news of the dreadful calamity. The appropriation of $200,000, to be immediately applied to the relief of the sufferers, is a generous and creditable manifestation of the sympathy felt by the people of this country, not only for humanity generally, but more particularly for the citizens of a sister republic, to whom we have in the past been bound by strong ties of affection and gratitude.

The Crop Outlook.

Unseasonable low temperatures throughout the West, with rain and snow in the Northwest, and especially dubious reports from the Red River Valley during the week, have in a large measure offset the effect of the favorable crop conditions previously existing and have been taken as evidence supporting the belief of a reduced wheat acreage. But while spring wheat seeding in the extreme North has been further retarded and the outlook there is less encouraging, the situation cannot be regarded as unusually unfavorable, considering the time of year. In the southern portion of the spring wheat belt the early crop is reported to be in good condition, but the general improvement noted in the condition of winter wheat by the Government Weather Bureau last week has been followed by less encouraging reports, and there is more or less solicitude concerning the crop in certain important sections of Nebraska, Kansas and Texas. On the Pacific Slope, while the crop is backward, its condition is generally promising. As a rule corn planting has made favorable progress in the Central States, although retarded in some other sections. With the more seasonable temperature now confidently expected, planting will proceed rapidly in the northern portions of the corn belt, where the soil is in fine condition. In the South favorable progress has been made, but rain is needed in the Southeast. The prospects in regard to other cereals and to hay are generally favorable, although news of a somewhat discouraging nature comes from portions of the West and South. The cotton crop, as a whole, is said to be in a good state of cultivation, and the outlook for this important crop presents no discouraging features. Taking the crop situation as a whole, no ground for apprehension exists at this stage of development.

Strikes in the Building Trades.

A decided check to building operations is noted in several parts of the country, owing to strikes of workmen in the building trades. In many instances these strikes have been settled by concessions made by the employers in the matter of higher wages or shorter hours. In other cases agreements have been reached between the employers and employed on the basis of mutual concessions, while in a number of instances the workmen continue idle on account of inability to reach an agreement with their employers. In view of the active condition of trade and of general business throughout the country, however, it is unlikely that many of the present labor disputes in the building trade will remain unsettled for any long period. The effect of these hindrances to building is already being felt in quite a number of distributing channels. Jobbers of plumbing goods, for example, note a marked falling off in the demand for plumbers' supplies, particularly in the East, and a similar condition of affairs is noted among the dealers in sheet metals and roofing supplies. In quite a number of instances contractors and others who have ordered goods for delivery by certain dates have requested that the deliveries be delayed until such time as the goods would be required for use. It is unfortunate that strikes should occur at a time when the outlook was so favorable for an unusually active building season. It is quite likely, if the strikes which now exist in various parts of the country are prolonged, that many projected building operations will be either abandoned or postponed indefinitely, particularly as the continued high price of some of the materials which enter into buildings already tends to prevent capitalists from undertaking construction work of a speculative nature.

Show Windows.

It has been obvious to those who have been giving any attention to trade methods that there has of late been a marked increase in the care with which merchants in almost all lines of trade have utilized their front windows for the display of goods and in various ways to attract custom to their stores. This fact has, indeed, secured recognition from the British Consul at Chicago, who in a report to the British Foreign Office refers to the trouble, expense and ingenuity which are used in having show windows well arranged. This is, indeed, referred to in connection with the mention of more grave and important matters which characterize American methods and contribute subsequently to the wonderful development of our business interests. The Consul's report might doubtless have gone further, and have made the point that houses enterprising and up to date in this regard are also prompt in adopting other methods which tend not only to increase the volume of their business, but to make it more profitable, as economy is secured wherever possible.

◆

It is just a year since a large portion of the city of Jacksonville, Fla., was devastated by the disastrous fire which destroyed 2368 buildings, entailing a loss of about $15,000,000, against which there was less than $6,000,000 of insurance. Since that time permits have been issued for the erection of 2109 new buildings in the city of Jacksonville, estimated to cost $12,650,000, most of which are to be put up in the burned district. Considering the circumstances, this is a splendid demonstration of the energy and courage of the citizens of Jacksonville.

The factory of the Lalance & Grosjean Mfg. Company, at Woodhaven, L. I., has just been equipped with an immense electrical illuminated sign 200 feet long, with letters 8 feet high. The sign can be easily read at a distance of 2 miles, and the illumination is visible at a considerably further distance. When it was first lit the effect was so striking that many people thought a fire had broken out at the factory. The sign is attracting much attention, as it is in full view of passengers by the trains running to Coney Island. It is one of the largest advertising signs of its kind in the country.

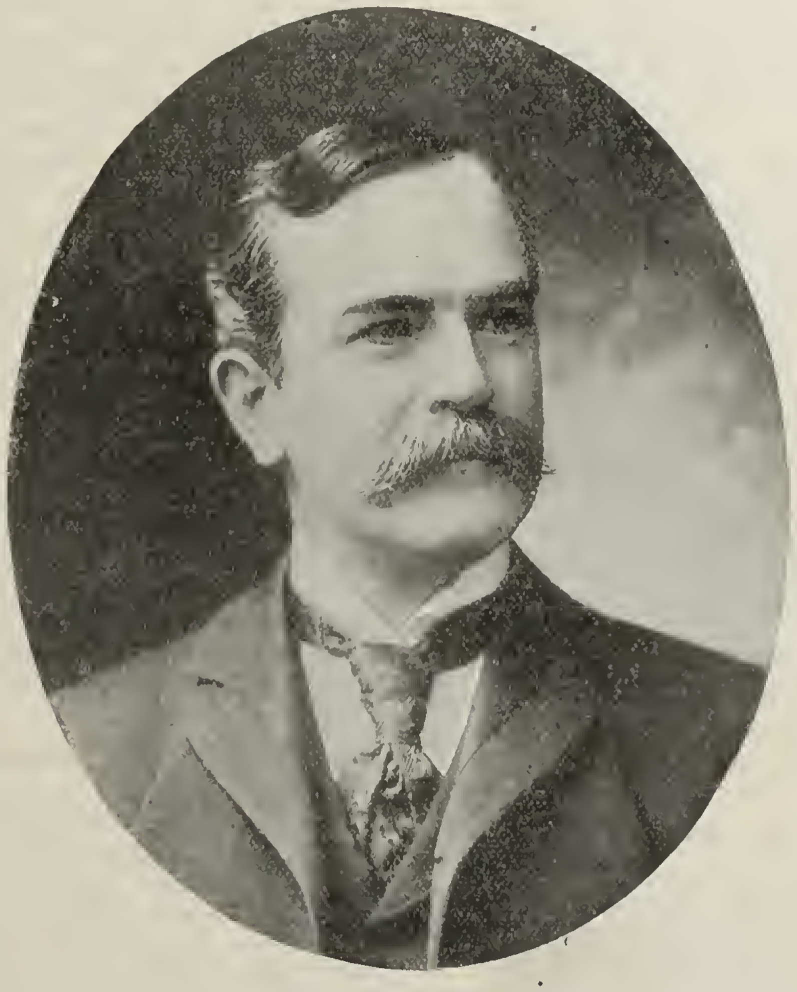
An international congress on Cheap Dwellings is to be held in Dusseldorf, Germany, from June 15 to 19 of this year, in connection with the Exhibition of Industry at that place. The last congress on this subject was held in Paris in 1900. An invitation has been extended to the United States to be represented at the congress.

The National Association of Stove Manufacturers.

THIRTY-FIRST ANNUAL CONVENTION.

THE delegates to the thirty-first annual convention of the National Association of Stove Manufacturers, the opening session of which was held at the Waldorf-Astoria in this city on Wednesday morning, May 14, came together under most auspicious circumstances. The weather was charming, the gathering was large and thoroughly representative, the topics to be considered were varied, and there was altogether such a feeling of cordial good fellowship and friendly interest as to make the meeting memorable in the annals of stove conventions. It was without doubt the largest gathering of stove manufacturers ever held, and that the deliberations were expected to be of great interest to the trade was evidenced from the fact that representatives were present from a very wide section of the country. How far this interest was manifest may be gathered from the roll of delegates which we present below.

The members came together in the East Room of the hotel shortly after 11 o'clock, with President A. N. Parlin in the chair. In a few well chosen words he introduced Jacob A. Cantor, President of the Borough of Manhattan, who extended to the members of the stove association and their guests a cordial welcome to the city of the Greater New York. His remarks were thoroughly in keeping with the occasion and were received with manifest appreciation by his hearers.



ALBERT N. PARLIN,
President National Association.

WEDNESDAY MORNING.

As the members entered the meeting room each was given a card, on which he wrote his name and that of the concern he represented. These cards were then turned in to Secretary Hogan, thus furnishing an authentic record of the members present, as follows:

Representatives Present.

P. B. Acker, Union Stove Works, New York City.
George Alig, Home Stove Company, Indianapolis, Ind.
W. J. Anderson, Richmond Stove Company, Richmond, Va.
Wm. S. Andrews, Stamford Foundry Company, Stamford, Conn.
Lew. A. Anshutz, J. C. Bartlett Company, Pittsburgh, Pa.
E. W. Anthony, Smith & Anthony Company, Boston, Mass.
Lew. W. Baker, the Portsmouth Stove & Range Company, Portsmouth, Ohio.
S. R. Baldwin, Pittsburgh Stove & Range Company, Pittsburgh, Pa.
Geo. H. Barbour, Michigan Stove Company, Detroit, Mich.
W. H. Barker, Weir Stove Company, Taunton, Mass.
John L. Baxter, Baxter Stove Company, Mansfield, Ohio.
Chas. F. Belcher, Walker & Pratt Mfg. Company, Boston, Mass.
A. O. Bement, E. Bement's Sons, Lansing, Mich.
A. M. Blanchard, Rathbone, Sard & Co., Albany, N. Y.
Stanhope Boal, Favorite Stove & Range Company, Piqua, Ohio.
J. W. Boehne, Indiana Stove Works, Evansville, Ind.
Frank N. Brayer, Co-operative Foundry Company, Rochester, N. Y.
Jos. Brower, Avondale Stove & Foundry Company, Birmingham, Ala.
Wm. J. Brown, Indianapolis Stove Company, Indianapolis, Ind.
Ralph S. Buck, Bridge & Beach Mfg. Company, St. Louis, Mo.
J. A. Buckwalter, Buckwalter Stove Company, Royersford, Pa.
N. H. Burt, Great Western Stove Company, Leavenworth, Kan.
Geo. W. Butcher, Southard, Robertson Company, New York City.
Wm. R. Butler, Lehigh Stove & Mfg. Company, Lehighton, Pa.
H. W. Buttorff, Phillips & Buttorff Mfg. Company, Nashville, Tenn.
A. L. Canfield, Danville Stove Company, New York City.
Chauncey H. Castle, Comstock, Castle Stove Company, Quincy, Ill.
C. H. Castle, Comstock, Castle Stove Company, Quincy, Ill.
F. Cavanaugh, Roberts, Winner & Co., Quakertown, Pa.
Henry N. Clark, Henry N. Clark & Co., Boston, Mass.
Walter A. Clark, Phillips & Clark Stove Company, Geneva, N. Y.
Wm. H. Clark, Cortland Howe Ventilating Stove Company.
E. C. Cole, Cole Mfg. Company, Chicago, Ill.
E. B. Colby, E. B. Colby & Co., Jersey City, N. J.
A. Colquhoun, Quakertown Stove Company, Philadelphia; Roberts, Winner & Co., Quakertown, Pa.
Wm. Corry, New York City.
E. S. Coyne, Eugene Munsell & Co., New York City.
Wm. M. Crane, Wm. M. Crane Company, New York City.
Henry Cribben, Cribben & Sexton Company, Chicago, Ill.
D. T. Crowley, Peninsular Stove Company, Detroit, Mich.
Lafayette Crowley, Detroit Stove Works, Detroit, Mich.
R. A. Culter, Culter & Proctor Stove Company, Peoria, Ill.
Geo. D. Dana, Charter Oak Stove & Range Company, St. Louis, Mo.
E. E. Dickenson, Boynton Furnace Company, New York City.
C. A. Du Charme, Michigan Stove Company, Detroit, Mich.
Wm. A. Dwyer, Art Stove Company, Detroit, Mich.
John M. Dwyer, Peninsular Stove Company, Detroit, Mich.
J. W. Emery, Channon-Emery Stove Company, Quincy, Ill.
Wm. S. Essick, Orr, Painter & Co., Reading, Pa.
C. E. Evans, Dighton Furnace Co., Dighton, Mass.
John J. Fisher, Excelsior Stove & Mfg. Company, Quincy, Ill.
James Foster, Danville Stove & Mfg. Company, Danville, Pa.
H. J. Fueller, secretary Pennsylvania Stove Association, Reading, Pa.
A. C. Fuller, Scranton Stove Works, Scranton, Pa.
Thomas Fyans, Floyd, Wells & Co., New York City.
A. B. Gardner, Estate of P. D. Beckwith, Dowagiac, Mich.
Fred. W. Gardner, Chicago, Ill.
A. F. Glaessner, Union Stove Works, New York City.
Geo. E. Graham, James Graham & Co., San Francisco, Cal.
H. R. Gummer, Gem City Stove Company, Dayton, Ohio.
Chas. C. Heath, Chas. C. Heath & Co., Baltimore, Md.
W. G. Henry, Detroit Stove Works, Chicago, Ill.
Uriah Hill, Jr., Union Stove Works, Peekskill, N. Y.
R. W. Hillman, Floyd, Wells & Co., Royersford, Pa.
Thomas J. Hogan, secretary N. A. S. M., Chicago.
R. H. Horne, J. L. Mott Iron Works, New York City.
Alfred S. Hughes, Southard, Robertson Company, New York City.
W. F. Hyde, Brand Stove Company, Milwaukee, Wis.
Josiah Jewett, Jr., Jewett & Co., Buffalo, N. Y.
Nathan H. Jewett, Jewett & Co., Buffalo, N. Y.
Lazard Kahn, F. & L. Kahn & Bros., Hamilton, Ohio.
Sam. Kahn, F. & L. Kahn Bros., Hamilton, Ohio.
W. P. Kellogg, Belleville Stove Works, Belleville, Ill.; Kellogg & Stokes Stove Company, Denver, Col.
Joseph F. Kernan, Syracuse Stove Works, Syracuse, N. Y.
Wm. Kerby, Utica Heater Company, New York City.
A. J. Kirkland, E. B. Colby & Co., Jersey City, N. J.

J. L. Klemme, Quincy Stove Mfg. Company, Quincy, Ill.
F. V. Knauss, Portsmouth Stove & Range Company, Portsmouth, Ohio.
W. H. Koll, Victor Stove Company, Salem, Ohio.
William H. Landers, Syracuse Stove Works, Syracuse, N. Y.
James A. Lansing, Scranton Stove Works, Scranton, Pa.
F. P. Leonard, Dighton Furnace Company, Dighton, Mass.
J. J. Leonard, Toledo Stove Company, Toledo, Ohio.
J. M. Litchfield, Mt. Penn Stove Works, New York City.
Henry C. Littlefield, Littlefield Stove Company, Albany, N. Y.
F. Percy Loth, W. J. Loth Stove Company, Waynesboro, Va.
D. M. McAfee, Thomas White Stove Company, Quincy, Ill.
Wm. McAlpin, Bridge & Beach Mfg. Company, St. Louis, Mo.
John H. McClure, Phillips & Buttorff Mfg. Company, Nashville, Tenn.
James F. McKee, Pittsburgh Stove & Range Company, Pittsburgh, Pa.
John R. McKnight, Mt. Penn Stove Works, Reading, Pa.
M. B. McKnight, Mt. Penn Stove Works, Reading, Pa.
T. J. March, March-Brownback Stove Company, Pottstown, Pa.
L. S. Marting, Foster Stove Company, Ironton, Ohio.
C. H. Miller, Champion Steel Range Company, Cleveland, Ohio.
George Mitchell, Pittston Stove Company, Pittston, Pa.
J. F. Montgomery, Taunton Iron Works, Taunton, Mass.
Lewis Moore, Joliet Stove Works, Joliet, Ill.
R. L. Morley, Michigan Stove Company, Chicago, Ill.
Martin Moses, Southard, Robertson Company, New York City.
Abram C. Mott, Abram Cox Stove Company, Philadelphia, Pa.
W. J. Myers, Union Stove Works, New York City.
Eugene Munsell, Eugene Munsell & Co., New York City.
J. Allison Orr, Mt. Penn Stove Works, Reading, Pa.
J. P. Ouerbacker, O. K. Stove & Range Company, Louisville, Ky.
Albert N. Parlin, Magee Furnace Company, Boston, Mass.
E. W. Peck, Co-operative Foundry Company, Rochester, N. Y.
Charles S. Prizer, Prizer-Painter Stove & Heater Company, Reading, Pa.
Thos. J. Rankin, Abram Cox Stove Company, Philadelphia, Pa.
E. Raftery, Rathbone, Sard & Co., Aurora, Ill.
R. G. Rennold, Richmond Stove Company, Richmond, Va.
William Ritchie, Boynton Furnace Company, New York City.
John Rogers, Home Stove Works, Chicago, Ill.
L. D. Streeter, Corning Stove Company, Corning, N. Y.
F. V. Streeter, S. M. Howes Company, Boston, Mass.
Frederick Sabin, Thomas, Roberts, Stevenson Company, Philadelphia, Pa.
Fred. Sattler, Belleville Stove Works, Belleville, Ill.
C. D. Shepard, Wm. M. Crane Company, Peekskill, N. Y.
Howard R. Sheppard, Isaac A. Sheppard & Co., Philadelphia.
Otis W. Snyder, Lexington Stove Works, Lexington, Ky.
Wm. D. Snyder, Keeley Stove Company, Columbia, Pa.
W. S. Stevenson, Thomas, Roberts, Stevenson Company, Philadelphia.
F. P. Stone, Lord, Stone & Co., Otter River, Mass.
Henry Swartz, Chas. C. Heath & Co., Baltimore, Md.
E. H. Taylor, Jr., Isaac A. Sheppard & Co., New York City.
Henry Terstegge, Terstegge, Gohman & Co., Louisville, Ky.
O. G. Thomas, Taunton, Mass.
H. E. Thomas, E. Bement's Sons, Lansing, Mich.
C. H. Trowbridge, Duffy, Trowbridge & Co., Hannibal, Mo.
James H. Vahey, Plymouth Stove & Foundry Company, Plymouth, Mass.
John P. Vahey, Plymouth Stove & Foundry Company, Plymouth, Mass.
J. W. Van Cleave, Buck's Stove & Range Company, St. Louis, Mo.
Hermann Van Voorhis, Galusha Stove Company, Rochester, N. Y.
Wm. H. Van Wormer, J. Van Wormer & Co., Albany, N. Y.
H. A. Viets, Fuller-Warren Company, Milwaukee, Wis.
Geo. W. Wagoner, Floyd, Wells & Co., Royersford, Pa.
Arthur W. Walker, Walker & Pratt Mfg. Company, Boston, Mass.
W. E. Walker, Weir Stove Company, Taunton, Mass.
Geo. H. Warner, Wm. M. Crane Company, New York City.
James H. Warner, Stamford Foundry Company, Stamford, Conn.
Walter P. Warren, Fuller & Warren Company, Troy, N. Y.
Henry Wetter, H. Wetter Mfg. Company, Memphis, Tenn.
Wm. Wewers, Gem City Stove Company, Quincy, Ill.
Allen W. Williams, Pioneer Stove Company, Columbus, Ohio.
Fred. Will, Sill Stove Works, Rochester, N. Y.
R. S. Wood, Fuller & Warren Company, Troy, N. Y.
J. M. Woodruff, J. Woodruff & Sons, Salem, Ohio.
A. J. Wright, Abram Cox Stove Company, Philadelphia, Pa.
James M. Ruso, stenographer, Rodgers, Ruso & Kelly, Albany, N. Y.

The next item on the programme was the reading of the minutes, followed by the election of new members, after which President Parlin delivered his annual address, as follows:

President Parlin's Address.

It becomes my pleasant duty to welcome you, as members and guests, to the thirty-first annual convention of the National Association of Stove Manufacturers of the United States, an association whose age is ample justification for its existence, a compliment to the character of its membership and a monument to the wisdom and foresight of its founders. In accepting the honor of presiding over your deliberations I stated that you could easily have made a wiser choice; not that I would withhold my efforts or any ability I possessed from your service, but I feared that such talent as I had was not of the kind best adapted to the requirements of the position. I must, therefore, ask your kind indulgence and forbearance during the deliberations of this body at this time.

We have under close review for our future guidance the first year of the twentieth century. It has been a year of great prosperity for our country and the industry we represent has enjoyed, perhaps, its full proportion. It is undoubtedly true that more heating and cooking apparatus was made and sold in the United States during the past year than ever before in the history of our business. The margin for profit, however, constantly decreases. Nevertheless, we may congratulate ourselves upon finding our profit and loss balance on the right side of the ledger. This is owing, largely, I believe, to the influence emanating from this body through the local associations it has created and fostered.

OUR PRODUCING CAPACITY.

The past few years have demonstrated that while a condition could exist, and did exist, that made a serious shortage in manufacturing capacity in many lines of industry, our ability to produce stoves is so much in advance of the natural demand that an abnormal requirement, such as occurred in 1899, caused us no serious embarrassment, and the demand was readily supplied. We can learn but one lesson from this—namely, that our surplus capacity, unless intelligently handled, will destroy the profit under ordinary conditions, and our energy and capital will be inevitably wasted.

We are now nearing, if we are not already at, the crest of the present wave of national prosperity. To change the simile we may liken the present period to the highest peak of a mountain range. It is our proud privilege to have come up from the valley of hard times and profitless business to our present position, an eminence never before attained, where we can look back upon lower peaks heretofore reached and the dark valleys between that we and others have traversed; but the mist of uncertainty veils our forward view. Have we reached the top? Is there a plateau where we may enjoy a season of comparative rest and prosperity? And if so, what is its extent? Of one thing we may be sure. There is a valley not far ahead, and we must be prepared to make the descent. As a united body, working wisely for mutual protection, we can do so in safety, but not otherwise.

CONSOLIDATION.

I apprehend that no greater or more useful work can be done by this convention than to consider this problem. Actual consolidation of interests by the formation of a so-called trust has had the attention of our members to a far greater degree during the past year than ever before. I am heartily in sympathy with any movement that aims to build up our particular industry along legitimate lines. Ours is a most noble calling. The comfort, the health, and, to a great degree, the happiness of the entire people are in our hands. It is a great responsibility, and he who so regards it and gives his life's best efforts to making the world better for his having lived in it, is entitled to some more substantial reward than the consciousness of having done his duty.

The history of consolidations in the past has shown that, to be successful, a high order of talent is necessary in the management. Those conceived by greed and born in the home of speculation have had, as a rule, but a short and sickly existence and had better never have seen the light. I can imagine an ideal condition; a combination of interests that would be invincible; where able and earnest minds, relieved from the petty annoyances of competition with one another, could be devoted to the improvement of the methods of manufacture and distribution of products, to the end that the consumer should procure better goods at lower prices than ever before, and yet capital and labor each receive its just reward.

THE PROGRAMME.

There has been placed in your hands a programme with subjects outlined for your consideration at this time, and I trust they will each receive your careful attention. Precedent may require me to address you somewhat at length on these and other subjects with which you are more or less familiar. I cannot hope to hold your attention as well, or impart the information that my abler predecessors have done, so shall not take the valuable time of the convention by attempting to do so, save in the briefest possible manner.

REDUCE THE PATTERN ACCOUNT.

Many notable successes in our trade have been achieved by those who have concentrated their efforts upon the manufacture of one article; and the conspicuous failures have been made by those who have over extended their lines in the foundry and pattern shop and sought distant markets for the distribution of their product. I, therefore, recommend for your consideration whether or not we cannot wisely reduce our pattern account, as well as our distributive expenses by confining our efforts largely to such territory as is contiguous to our foundries. We should naturally receive more or less business from all parts of the country through correspondence; but branch houses and a large corps of travelers attempting to sell New England goods in the West, and *vice versa*, will, in my opinion, in the long run, prove to be a delusion and a snare. For what shall it profit a man if he gain all the trade of his competitors and lose his own capital, to say nothing of his peace of mind?

THE INDUSTRY.

We have long led the world in the manufacture of heating and cooking apparatus. Our industry needs no protective tariffs, for nowhere are stoves made so well or sold so cheaply as in the United States. In this respect we hold the proud position of having led all other industries. But, alas! for our balance sheets, we make our goods so well and they last so long that the volume of sales possible is much restricted, and a profit that would be considered large on an article of daily consumption is not sufficient to pay the expenses absolutely necessary under present conditions to produce and market our product. I am, perhaps, threshing old straw in referring to these well-known facts, but I have felt that it was a subject that could not be too often impressed upon our minds and attention.

CHAUNCEY H. CASTLE,
President Defense Association.

THE YEAR.

Even the most casual review of the past year would be most incomplete if reference were not made to the many notable events that have occurred since we last met and which have kept this country continually in the eye of the entire world. Ae we were leaving our homes to attend this convention, the greatest catastrophe of modern times was visited upon an island adjoining our shores. We stand aghast at the horror, and our minds fail to grasp its extent, but our sympathy goes out in fullest measure, and our means are freely offered to help the survivors. When we were last assembled a panic occurred which shook the very foundation of the financial world and from which it has hardly recovered at the present time. But a few short months later an event took place which created a far greater shock because involving the entire nation and causing every citizen, however humble, to feel that he had sustained a personal loss. The tragic death of President McKinley, who has truly been called the best beloved of all the rulers of our land, cast a gloom over every city and village from Maine to Florida and from the Atlantic to the Pacific Coast. Of him, as of few, it could truly be said, " He has fought the good fight; he has finished his course; he has kept the faith. Henceforth there is laid up for him a crown of glory." Abler pens than mine have many times written his eulogy, but his best memorial will ever be in the hearts of his countrymen, whom he served with such fidelity and steadfastness of purpose.

SURVIVING NATIONAL CALAMITIES.

It is food for serious reflection that within the brief space of 40 years, in this greatest republic the world has ever known, where equal rights and privileges are the heritage of all, three of our chief executive officers, each born in the humbler ranks of life and rising by his own unaided efforts to the highest place of honor and responsibility, elected thereto by the suffrages of a free people, should have been slain by the hand of the assassin. Can it be that there is too much liberty in our beloved land? Is human nature too weak to be trusted beyond certain limits? Time alone can answer that question and we are not called upon to discuss it here.

A friend, writing to me recently, so aptly referred to one phase of this subject that I will quote his language, believing it will prove of interest:

> The President died, amid sincere public mourning. His successor was quietly inaugurated, and the national life went on with scarcely a flutter of the pulse or an accelerated heart beat. The national prosperity continued unchecked, and the world looked on amazed at the spectacle of a nation which could pass through such an experience and not have a single day of uncontrolled excitement, nor a serious attempt to unsettle values. From this incident we learn more than economists and academic students are able to teach us of the value of such alliances of interests as have grown up in this country among the master minds in finance, trade and industry. The New York Clearing House is the most conspicuous example of a beneficent "trust" ever known since the country was founded. Then, as more than once before in the history of the country, it held the tiller with a firm hand and guided the great flotilla of finance between the Scylla of popular apprehension and the Charybdis of speculative interests ready to wreck everything in the hope of profitable salvage. Such an object lesson was needed to show us upon how solid a foundation our unprecedented national prosperity is founded, and with how much of profound wisdom those who organized this government laid the basis of our social and political institutions.

THE SILENT MAJORITY.

Since we last met death has visited our ranks and taken a larger number than usual from our membership.

R. R. Finch of New York City; N. Brayer of Rochester, N. Y.; George W. Walker of Boston; G. H. Holland of

St. Louis, Mo.; E. Emrich of Columbus, Ohio; A. T. Henderson of Reading, Pa.; W. H. Shick of Reading, Pa., and E. W. Fiske of Boston have joined the silent majority during the past year. I regret that, with the exception of Mr. Walker and Mr. Fiske, my acquaintance with these gentlemen was very limited, and I suggest that a committee be appointed to draft suitable memorials, and that the same be inscribed on our records and become a part of the proceedings of this meeting. I desire to say a few words, however, in reference to Mr. Walker and Mr. Fiske, who for many years were my neighbors and friends, and of whom I can speak from personal knowledge.

GEORGE WILLIS WALKER.

George Willis Walker, at the time of his death one of the oldest stove manufacturers in New England, and president of the Walker & Pratt Mfg. Company of Boston, was born in 1827, in Exeter, Maine, near Bangor. He worked on his father's farm until he was 18 years of age, when he came to Boston to seek his fortune, entering the employment of a retail stove dealer. In 1853 he was employed by Fuller, Warren & Co. as a traveling salesman. After five years' service he took the agency of their goods and opened a retail store in Boston on his own account. From that time on his career was one of continued success. Subsequently, his business was united with that of Miles, Pratt & Co., foundrymen, and the present corporation of the Walker & Pratt Mfg. Company was founded in 1874. He had the respect and confidence of all who knew him. He held many public offices in Malden, where he resided, and represented the city in the State Legislature in 1885-1886, and served as Presidential Elector in 1892. He was an able merchant, a fair competitor and a sincere friend. His word was always as good as his bond.

EBEN WINSLOW FISKE.

Eben Winslow Fiske, secretary of the Smith & Anthony Company, who died on April 29, at Waltham, Mass., was born in that town May 22, 1860. He commenced business with the Smith & Anthony Company as a clerk, soon after graduating from the high school, in 1879, and as a result of his faithfulness was rapidly advanced from one position to another until he was made secretary of the company, which position he held at the time of his death. Mr. Fiske was an alderman of the city of Waltham for three terms, being president during his last term, filling the office with the fidelity and ability characteristic of the man. By his death the stove trade of New England has lost an associate who was honored by all who knew him.

THE LOCAL ASSOCIATIONS

The local associations, as I said at the beginning, are the real sources of our mutual helpfulness. Where a member of one association seeks trade in territory governed by another, of which he is not a member, great care should be taken to learn fully the rules adopted by the local association governing that territory before quoting prices or selling goods therein. Our secretary is always prepared and glad to impart this information, and simple good faith between ourselves requires that we rigidly observe this rule of conduct.

We are glad to welcome to-day, as guests, so many friends whom we should be pleased to enroll in our ranks. Let us strive to make the advantages of membership so evident that no manufacturer of stoves can afford to remain outside. In union is strength. Can we not easily find some common ground on which we can loyally and firmly stand, and so correct many of the abuses which have gradually crept into our business, and which, unless rooted out, may become fixed habits to control our future action? I allude to such matters as free blacking, freight allowances, free deliveries, allowances for goods broken in transit, advertising for customers, &c. And whatever we do, let us be true to ourselves and to each other.

The criticism has been heard in the past, that we, in convention, were too much like sign posts, pointing the way but never going therein. Let us prove the falsity of such an aspersion by making this meeting one long to be remembered for the helpful measures adopted, and for its wise legislation, as well as for the good fellowship displayed, and for which all our past meetings have been notable. No one values more highly than myself the social features of our convention life, but we must all agree that the opportunity should not be lost to do some good work for our common cause, so that year by years these gatherings should enable each of us to take a long step forward and upward toward a better way of business life and action.

PRICES AND FREIGHT CHARGES.

It seems hardly necessary for me, at this time, to impress upon you the importance of maintaining the prices fixed by the local associations. The cost of labor and of all materials entering into our productions has advanced to a point where it is impossible to sell stoves and like goods to-day at the prices that prevailed during the past year without positive loss to the manufacturer. Those who have not already secured their supplies for the year may indeed find it impossible, in the near future, to obtain their requirements.

The welfare of the association can be promoted by taking some action in reference to the present methods of classification of freight by the railroads. I recommend that a committee be appointed to take this matter up at once with the Transcontinental Freight Bureau. There is no good reason why, if we load and ship a full car of goods, we should be compelled to pay the rate for "less than carload" lots. But, under the existing rules, the railroad inspector is instructed to examine the contents of the cars, and, if a portion are stoves and the balance furnaces or any other goods carrying under their classification a different tariff rate, to change the billing and charge a "less than carload" rate for all. At the present time this rule does not apply to all parts of the country, but if we do not, as a body, protest against such an injustice I believe it will be but a question of time when it will be made to apply universally.

In closing, I wish to express my deep sense of obligation to our efficient secretary for his able and courteous assistance during the past year; to the Executive Committee, whose services have at all times been at the command of the members of this association; to our treasurer, and to the entire membership for the kind words and helpful suggestions which I have so often received, and which have made the honor of serving you one of the most pleasurable experiences of my life.

A Flourishing Association.

The remarks of President Parlin were followed with deep interest by the members, who at frequent intervals manifested their appreciation by heartily applauding. Upon the conclusion of the address Secretary Thomas J. Hogan rendered his annual report, showing the association to be in a most flourishing condition. What he had to say was still further emphasized by the financial report of Treasurer Walter S. Stevenson, which immediately followed.

Consolidation Discussed.

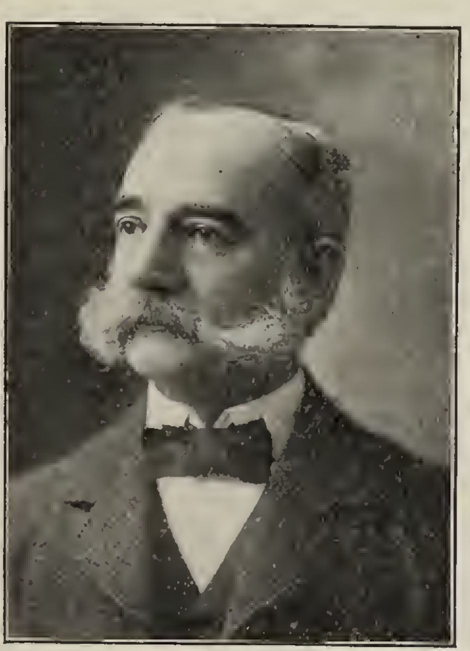
For some time past it has been intimated that one of the subjects likely to receive consideration at this meeting of the stove manufacturers was that of consolidation of certain interests in the trade. This supposition proved to be correct, the leading topic on the official programme being "Consolidation; Can It be Successfully Applied to the Stove Business? And, if so, Upon What Plan or Basis?" The discussion was opened by Lazard Kahn of Hamilton, Ohio, who, as is well known, has for some time past been at work upon such a project. It is equally well known, however, that the movement has not in any way been pushed under the auspices or by the authority of the National Association. The opportunity was simply given on this occasion for Mr. Kahn to present his views to a much larger audience of stove manufacturers than could be secured at any other time. Mr. Kahn was well primed with facts and figures relative to the stove business, and presented his views on the question in a most interesting and attractive manner. His remarks were closely followed by the members, who evinced a deep interest in all that was said. The discussion of the subject was still in progress when the session at 1.30 adjourned to meet again at 3 o'clock.

WEDNESDAY AFTERNOON.

A further increase in the already large attendance was notable when the afternoon session was called to order. The convention was in the spirit worthy of the important industry represented and unanimously, by a rising vote, conferred on Fred. W. Gardner the distinction of making him an honorary member of the association for life. This is a fitting recognition of the active interest and untiring effort expended for the welfare of the association. It afforded ex-President Stanhope Boal, who is well qualified by official association with Mr. Gardner, to bring to the attention of the members the many labors pursued by him persistently in the face of discouragement till the desired benefit to the association had been realized. Mr. Boal's remarks reflected earnest feeling and indelibly stamped the works of Mr. Gardner on the memory of the members. Other associates spoke to the same end, and that Mr. Gardner was overwhelmed with gratification and surprise is not strange. His response was a simple expression of thanks made very feelingly.

THOMAS J. HOGAN,
Secretary of National and Defense Associations.

The discussion at this session opened on consolidation, and whether due to the heat of the argument or to fiery oratory, it was abruptly stopped by a fire on the floor above. As J. W. Van Cleave was speaking at the time it is evidence of the force he brings to a debate. As water came pouring down into the room the meeting dispersed, some laughing that stove men should be afraid of fire and others joking about "already watering the stock." The fire being slight, the meeting was soon resumed and the discussion on consolidation closed with an invitation for those who were interested in the subject to meet in the room at 9 o'clock on Thursday morning.



WALTER S. STEVENSON,
Treasurer of National Association.

The discussion of "Pattern Expense" was then taken up, the general expression being that there should be retrenchment in this field. One member pointed out, however, that stoves were largely used by the women folks, who were accustomed to four styles of bonnets in a year, and it would not do to bring out but one style of stoves in four years if the stove trade was to keep up with the progress maintained in other branches of trade. This subject occupied the convention till adjournment.

THURSDAY'S SESSION.

The convention was called to order by President Parlin at 11 o'clock. Discussion of methods of cooperation for the general good of the trade resulted in the appointment of a committee to draft a resolution for preventing the invasion by members of the territory of the different local associations. The committee was composed of Abram C. Mott, A. H. Walker, Dr. Henry, Wm. J. Myers, F. D. Knouss and R. G. Rennolds. A resolution was presented and adopted defining the territory of the local associations.

ABRAM C. MOTT,
Treasurer Defense Association.

In discussing the advisability of sending representatives to hardware conventions, it seemed to be considered an expensive practice that was inadvisable and unnecessary and one that should be discontinued. The discussion of the use of malleable iron in stove construction was extended, and reflected the opinion that no benefit was derived sufficient to warrant the increased cost.

In considering the establishment of uniform selling prices on different types and grades of stoves it was suggested that the secretaries of the different associations meet to confer for this purpose at some time to be arranged by the National Secretary. The discussion on using the names of other stoves, whether as a prefix for trade-mark names or otherwise, was then taken up with a view to remedying a matter that has become serious and to be overcome. It was finally decided that the disadvantage was not of sufficient importance to do any special harm.

By a unanimous vote Cleveland was selected as the place for holding the next convention.

Election of Officers.

The old board of officers was re-elected unanimously as follows, notwithstanding the remonstrance of Fred. W. Gardner that an honorary member should not hold office.

President, Albert N. Parlin, Boston, Mass.
Vice-Presidents, Frederic W. Gardner, Chicago, Ill.; Frederick Will, Rochester, N. Y.
Treasurer, Walter S. Stevenson, Philadelphia, Pa.
Secretary, Thomas J. Hogan, Chicago, Ill.
Central Executive Bureau: J. W. Van Cleave, St. Louis, Mo.; J. W. Boehne, Evansville, Ind.; A. W. Walker, Boston, Mass.; W. J. Myers, New York City; W. H. Cribben, Chicago, Ill.

A very successful convention then adjourned *sine die.*

CONSOLIDATION.

On Thursday morning a fair representation of manufacturers held a meeting presided over by Lazard Kahn, to whom the subject of consolidation had been assigned in the official programme, and others speakers presented further views favoring the project. The purpose apparently was to ascertain who were sufficiently interested before any definite proposition was outlined.

Following the adjournment of the convention on Thursday afternoon an informal meeting was held, at which John W. Baker of Philadelphia presented his proposition for a consolidation of stove manufacturers. Mr. Baker's scheme had no connection with that proposed by Mr. Kahn.

Although the consolidation idea is undoubtedly favored by quite a number of the stove manufacturers, it has thus far failed to inspire enthusiasm or to receive the substantial support necessary to its accomplishment. Nevertheless, in view of the persistence with which it is brought forward for consideration, it would be unwise to make the positive prediction that a consolidation cannot be effected.

THE OUTSIDE CONVENTION.

H. T. Richardson, Dwight Corwin and W. M. Brinkerhoff held a session on the second floor corridor, unmolested. They spent the time in planning to add more supporters to their method of protecting the manufacturers' interest in an extension of the sale of stove repairs from their own plants and against the use and sale of repairs made from castings by the pirates.

Robert Galbraith of the Vedder Pattern Works, Troy, N. Y., has a new grate adapted for furnaces and boilers, which is being used by several stove manufacturers, and which he brought to the attention of many of the members of the association.

Thomas Austin, 567 Quincy street, Brooklyn, N. Y., showed a photograph of the newest thing in fire place heaters, which also heats an upper room, is a ventilator and an open fire.

John H. Sayres talked pig iron in the interest of Rogers, Brown & Co. of 71 Broadway, New York. Some wanted to know if Mount Pelée spouted any iron ore, and what the profit would have been if a pig bed had been ready to receive the run and whether it would have brought pig iron down to $9.75 again. Hard questions!

Secretary E. D. Frohman of the S. Obermayer Company, Cincinnati, Ohio, said nothing about the exhaustive line of foundry equipment and supplies the house can furnish, but simply enjoyed greeting old friends in this branch of the foundry trade.

Chester Bascom of the Vedder Pattern Works, Troy, N. Y., had many little confidential chats with stove men, probably in reference to new patterns and redressing old favorites. But these secrets will be made public later.

John McLaughlin, 215 North Second street, Philadelphia, reports some activity in pattern making for the stove trade. And he does not draw all of his patronage from Pennsylvania by any means.

Jos. Leon Gobeille of the Gobeille Pattern Works, Cleveland, Ohio, was found in many groups of stove men. All know that patterns for any class of goods can be got in Cleveland, although high grade goods are the kind for which the plant has built up a reputation.

D. M. Ireland and Charlie Matthews of the Ireland & Matthews Company, Detroit, Mich., were both at the convention to talk with old customers and friends on stove trimmings.

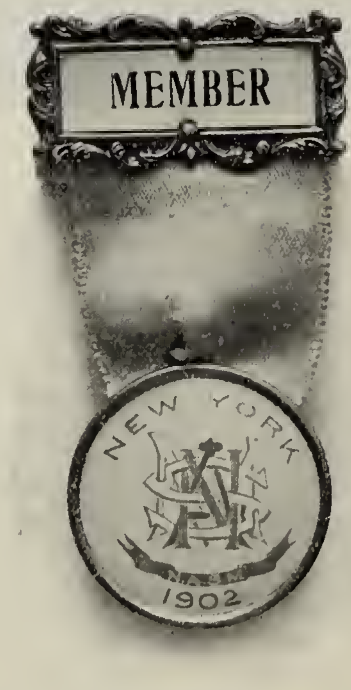
Henry Gleason, on his own stamping ground, while lending efficient aid in dispensing hospitality, had a word in season for his own specialties.

John E. Gaitley of the Troy Nickel Works, Albany, N. Y., leaves no impression of Alaska in the genial warmth of his fellowship. But the other fellow often leaves an order for Alaska specialties that is very impressive.

A. T. Matthews of the Matthews Mfg. Company, Worcester, Mass., dropped a few words now and then on stove knobs, trimmings, &c., when the social side afforded an opportunity.

Charles E. Evans of the Evans Stamping & Plating Company, Taunton, Mass., spoke of some new things for stove makers that are to come, and enjoyed meeting so many stove men in a bunch.

C. W. Miller of the Champion Steel Range Company, J. Scott of the Cleveland Co-operative Stove Company and W. Bates and S. D. Latty of the Kirk-Latty Mfg. Company of Cleveland, Ohio, distributed red, white and gilt buttons bearing the inscription, "N. A. S. M., Cleveland, 1903," to influence the members to accept the invitation of the Cleveland Chamber of Commerce to hold the next convention in that city.



BADGE OF MEMBERSHIP.

A whisper went around that St. Louis wants the convention in 1904, so as to make the Louisiana Purchase Exposition a success.

A. W. Bowman of the Russell & Erwin Mfg. Company, New Britain, Conn., brought greetings to the many customers of his house.

Uriah Hill, Jr., received many congratulations on the sixtieth anniversary of his wedding. He is a much younger looking man than many of his *confrères* who are not octogenarians.

The studio of Falk, the photographer on the fifteenth floor of the Waldorf-Astoria, was visited by quite a number of the stove manufacturers. It is beautifully appointed in the salon and perfectly equipped in the studio. Those who sat for Mr. Falk felt the enjoyment of making a new acquaintance rather than the constraint of having to submit to an ordeal. The portraits of the officers of the Stove Founders' National Defense Association were made in Falk's stdio.

Among the notable guests present at the smoker on Wednesday evening was John Patterson of the National Cash Register Company, Dayton, Ohio. Mr. Patterson has won well deserved fame among manufacturers for the admirable schemes devised for the betterment of employees which have been carried out under his direction to such a great extent in the works of his company. This was naturally a favorite topic of discussion whenever Mr. Patterson was introduced to a stove manufacturer, as everybody desired to get as much light on the subject as possible.

Frederic W. Gardner of Chicago, one of the vice-presidents of the association, was the recipient of a very high compliment at the session held on Wednesday afternoon. As a fitting acknowledgment of the services rendered the association by Mr. Gardner during his long connection with the stove trade ex-President Stanhope Boal presented a resolution making Mr. Gardner an honorary member for life, supporting his resolution in a speech which excited much enthusiasm. The resolution was seconded by another ex-president, Charles S. Prizer, who also eulogized Mr. Gardner and in the strongest terms set forth the desirability of this action. President Parlin followed in a similar strain. A standing vote was taken and the motion was adopted unanimously. The distinction conferred on Mr. Gardner is the more noteworthy from the fact that he is the first to be enrolled as an honorary member of this organization.

J. Q. A. Butler brought more than half a century of experience in the stove trade when he came up from Beekman street to the convention, and many of the members gave him a cordial greeting, taking pleasure in introducing him to a younger generation of stove makers, Mr. Butler is as young in spirit as any of them, and still attends to the details of the business that he conducts.

E. A. Ireland came on from his headquarters in the Auditorium Building, Chicago, to greet the stove men, as only he can, for the Matthews & Willard Mfg. Company, Waterbury, Conn., and the Harshaw, Fuller & Goodwin Company, Cleveland. Stove knobs, hinge pins, rings and edges are sold in large quantities by him for the former company which he represents in the West. For the latter company his friendly associations with the trade enable him to dispose of a goodly tonnage of nickel anodes to the shrewdest buyers. He placed an order for 4 tons on nickel anodes after talking with Thomas I. Rankin of the Abram Cox Stove Company of Philadelphia. Invite Ireland to see you if you want the latest was a suggestion well received by those who know him best.

Of all the happy Cleveland men none were more pleased than S. D. Latty of the Kirk-Latty Mfg. Company, Cleveland, Ohio, when Cleveland was selected as the place for holding the next convention. Does he feel that they have *riveted* their affection to the Forrest City and *bolted* from all others for a time?

Secretary Hogan displayed admirable taste in the design of the badge of the association, a cut of which is presented in this issue. The badge worn by a "member" were attached to a blue ribbon, while that worn by a "guest" had a red ribbon attached. The badge was neat, pretty and not too conspicuous.

Reference has been made to the record breaking attendance at this convention. This, however, is no new experience. Every year since Thomas J. Hogan became secretary the attendance has surpassed that of the preceding year. More convincing evidence could hardly be presented of his efficiency. During his tenure of office the influence of the association has grown stronger and stronger, aided materially by the development of local associations, in which his genius for organization has borne such fruitful results.

THE SMOKER.

The stove manufacturers of New York and vicinity tendered a "smoker" to the members of the National Association on Wednesday evening. It was held in the Astor Gallery of the Waldorf-Astoria, under the direction of the following committee: P. B. Acker, A. L. Canfield, G. W. Butcher, Eugene Munsell, Edward Bowditch, R. H. Horne, E. E. Dickinson, Henry T. Richardson, F. L. Sheppard and E. F. Hill. The occasion was a delightful one. The room in which the function was held was admirably suited to the purpose. Entertainment was provided in the nature of a *melange* of professional artists, as well as the usual refreshments accompanying an affair of this kind.

The smokers given by the New York stove men have greatly increased the attractions of the Empire City as a convention center for stove manufacturers. All the details were carefully worked out. The cigars bore gilded bands, having the letters "N. A. S. M.," in honor of the occasion. After the magicians had created feelings of envy by showing that absolutely no plant was necessary to manufacture handkerchiefs and the musician had played a violin solo on an ash pan, the following *menu* was served:

Bouillon in cups.
Lobster, Newburgh.
Chicken Salad.
Assorted Sandwiches.
Fancy Ices.
Cakes.
Coffee.

The enterprise of one of the vivacious stove men, who wears gray in his hair for effect, was displayed in an exchange of salutations with the sylph-like (?) prima donna. The man with the topical song gracefully alluded to Lazard Kahn as a man to be considered when a big enterprise is in hand; to George H. Barbour as an advocate of consolidation; to Fred. W. Gardner as a suitable subject for honors, and to A. N. Parlin as a president, *par exellence.*

When the fellow feeling was most kind a very pretty souvenir was distributed by the Kirk-Latty Mfg. Company of Cleveland, Ohio. It was silver from Gorham's and will be treasured. On one side was inscribed "Compliments of the Kirk-Latty Mfg. Company, Cleveland, Ohio," and on the other "Stove Bolts." It came in a box packed in cotton bearing Gorham's name. One of Mabie, Todd & Bard's best flat pencils was inclosed in a flat silver sheath so the point was protected and arranged to be reversed for use. A card requested that another pencil be sent for when needed for writing orders for stove bolts, rods, rivets, &c. It was one of the bright things that took the slime off anything that the artists on the stage got off.

The entertainment on the stage was pleasing, but the social spirit prevailed, and the visiting between the groups at different tables was continuous and by far the happiest feature of the affair. The enjoyment of these New York smokers has been such as to recommend their adoption as the best form of entertainment at conventions.

THE TRADE PRESS.

Cordial welcomes were exchanged between the different members of the trade press, who took pleasure in aiding each other in extending their acquaintance with the stove manufacturers and the manufacturers of supplies. The dean of press representatives was T. S. Bowman of the *Stove and Hardware Reporter*, St. Louis. Daniel Stern and Sidney P. Johnston of the *American Artisan*, Chicago, aided Mr. Bowman in representing the West.

The courtesies of the East were extended to their Western *confrères* by George W. Cope, Frank K. Chew and Henry Colwell, representing *The Metal Worker*. This branch also had an outside attendance in James C. Bayles, who is well known to the stove trade from his long connection with *The Metal Worker* and whose contribution to this issue will no doubt be read with greater interest as it is accompanied by a contribution by the irrepressible "Jeems," who was discovered by Mr. Bayles.

WALDORF-ASTORIAETTES.

BY JEEMS.

Time flies so fast that it seems but yesterday that the stove manufacturers were bidding farewell to their hospitable Eastern brethren at the famous Squantum Club, singing that grand old battle hymn, "Good-by, Squantum, We Must Leave you," but, presto, here we are again, Mr. Merryman, as the clown says in the circus. "Wait on the lady, and see what she wants," says the ringmaster. "To be sure, the lady wants the banners," she says, "bring forth the banners, boys," and the boys rush on with them, and the show is on in full swing.

* * *

The entertaining of the members was a problem for New Yorkers that took considerable time to solve. A drive around the city and a call on the Mayor, a trip over the new East River Bridge and a visit to the subway, and theater at night were considered. But as it was aptly said, if they got out on the bridge it was doubtful if there was enough high minded ones to stand the trip over, and there was no use of risking the experiment. The drive along the subway was all right, as it was kinder natural for some to get underground, but the fact was brought out that some fool of a workman might touch off a blast just at the most interesting moment, and that would mean a lot of muss of scraping up the pieces of the members and mounting them up in any decent shape, so that their folks would know their own patterns. The theater was abandoned from the fact that the vicinity of all the theaters is so crowded at night that the danger of crossing the street with such a number of unduly excited people might result in injury to some of the automobiles, or perhaps knock cabby from his box or squash a policeman, to say nothing of the danger of the kidnappers who are looking for just such "come ons." So it was resolved to corral the whole bunch in the house at night, and stuff and smoke and amuse them to their limit. In this way they would have all present and accounted for, and if anything happened to any one he could be boxed, tagged and shipped at "owner's risk," with the reasonable clause of dangers of the sea and rail only excepted. This would show the man's family and friends that everything had been done that could be done for the visitor.

You see it is this way: New York has but a few left in the stove business; outside competition is so fierce that had they not stowed away a good lot of "cash" early in the game the Waldorf would not have been possible; as it is, they have got caissons sunk in their cellars where they keep the stuff. "You can have our business, but the good stuff we stowed away, never, except it is in the way of hospitality; the caisson is at your service." So it was resolved that Brother Oscar of the Waldorf staff should do his best for the convention if it busted all the caissons in their cellars, and its needless to say that the banners and the hoops were a big success, especially the hooped up hoops from Cedar Rapids, L. I., which made so many of the younger members blush because—never mind.

* * *

There are and have been differences of opinion regarding the matter of entertainments and much can be said on the subject, but down in the inmost soul of man there is something stirred up by it that more than compensates for the loss of old Mr. Business.

Pop Business is all right; nevertheless he is only human and he must be shaken up now and then. It is not required to neglect the old duffer, but let him keep in line. With these few remarks we will resume the subject.

* * *

It is the testimony of all the globe trotters that there is not a hotel in the world where such a scene of social activity is presented as the Waldorf furnishes on the first floor, and it can be affirmed that the members present enjoyed it immensely. And what is more, many of the regular corridor frequenters were delighted with the good looking and prosperous lot of men who wore the rosette of the association. "Every one looks like a regular captain of industry," said one of the habitues as he passed through the swing doors of the sample room of the Waldorf.

* * *

We are hearing a great deal these times about the "captains of industry" and what they are doing and what they are going to do, but the term is generally applied to a few people only like Boss Morgan, Johnny Rockfellow, Charlie Schwab and a few others who have piled up treasures on earth, in order that we may admire it and learn of them how good and easy it is, and how profitable it is to serve mamon when you go at it in a straight, forward hit out from the shoulder and fight to a finish mode.

* * *

Well! the stove manufacturers have got the same kind of captains of industry who will head and put an army in the field, and before snow flies, that will paralyze the other captains of industry, both in boldness of execution and the grandeur of their plans. As one of them explained in the cafe of the Waldorf, our intention is to benefit every man, woman and child in our business. "We are going to turn over our entire business and property in one grand trust for their entire and exclusive benefit for ten years. Not one dollar on salaries is to be paid to us captains, nor dividends of any kind, except say, 3 per cent. interest on the actual capital, mind you! the actual capital; no water allowed in our deal. We absolutely trustee everything over to them and we propose to work like 'son of a guns' for the benefit of the industry. The only hitch in the whole affair is with the labor unions. They insist that the interest clause shall be stricken out and the matter of future payments left to their discretion; also that no manufacturer or son or relative of one shall be employed in the company in any capacity whatever. This hardly seems fair, but if we cannot get any better 'terms from them we will be obliged to accept, besides—' Just then Oscar came around and sung out, "Hackensack Meadows, all out."

* * *

That famous old subject of prices was thrashed over among many in their heart to heart and hand to mouth interviews in the many nooks and corners of the big inn. Now if all that was said on the subject could have been reported by a yellow journal expert it would have made highly entertaining reading. There were so many massive and well fortified items of how some concerns were cutting the life out of things, "while we, bless our dear hearts, were staggering under our burden and they scooping our customers. Why, look here, gentlemen, as an illustration, we are asking for our Consolation $20; and mind you I want you to understand we are getting it, and if they don't pay it they don't get it, while those fool killers near us are actually selling at last year's prices for future delivery and are getting our customers; don't blame the customers, but we will keep our stoves and melt them up before we will sell them at such prices." Just then a camp follower, who had been in the party, invited the bunch to take a little filtered water with him, and he casually remarked to one of his intimates in the group that he heard what John said, "but I will be durned if I haven't just left old Bill Jones shooting off his mouth about John's people doing exactly the same stroke of business, and said that he would keep his stoves until it froze over before he would do business that way."

* * *

The fact is, these human contradictions "tend to maceration of superficial part of the empidermis of the mind, which becomes excited, and occasions probably too rapid a proliferation of the cells of the Malpighian layer." At least this is the solution of the veteran Henry Cribben, and he comes pretty near knowing of what he is talking about. A good deal pro and con, whatever that means, can be said on this subject.

* * *

The New York manufacturers invited all the members and what came with them, including all the staff of "followers de camp," to a "conflagration," as they facetiously expressed it, to be held on Thursday evening, which was afterward changed to Wednesday evening, but in the anxiety of Oscar's help to run things one of his right hand Chit Muggars from Hindustani, Ireland, constituted himself a committee of one on conflagaration, went up on the next floor, where the properties were stowed for the show, and touched off the stuff on his own account, and the consequence was he iiked to have burned down the whole goll darned tavern. As it was, they turned on so much water to put out the blaze that it ran right down in the meeting room and soaked some of the members. Of course the crowd didn't mind the fire, for they are used to that, but they did object to water, except—after. As a chaser it is ali right, but as a shower bath during business hours it is inconvenient. The Hindustani was asked what business he had to set off the fireworks? "Sure," he replied, "some one sung out let her go Gallagher and sure I did."

* * *

Jake Cantor, president of the Borough of Manhattan, in a neat and brief address invited all the gentlemen to use the town just as though they owned it, because, as Jake put it, old Ben Franklin was a stove man, and as far as he was concerned he went in for cook stoves and for that matter cooks also. If there was anything that brought happiness and contentment it was a good stove. He didn't say if he preferred steel or cast iron make. Jake was all right, but he claimed too much. He said the municipality made the weather to order for them, when the real fact was it was Bill Myers who done it. He had the sky all swept and the sun cleaned off and it was real lovely, as the ladies say.

THE NATIONAL ASSOCIATION NUNC PRO TUNC.

BY JAMES C. BAYLES.

It is the privilege of one who feels himself irresistibly drawn near

> —those iron gates
> Where age upon a mound of ashes waits

to do sundry and various unpleasant things (which, from the viewpoint of the one to whom they are done, are as unnecessary as they are undesirable), to be reminiscent. This has been my mood ever since, at the welcome invitation of my friend Parlin, I became a visitor at the meeing of the National Association of Stove Manufacturers at the Waldorf-Astoria on Wednesday and Thursday last. The interval since the last convention which it was my privilege and pleasure to attend was about 20 years. In itself considered, this fact has no especial significance and can scarcely be expected to possess greater trade interest than might very well have been exhausted in a news item to the following effect:

> At intervals during the meeting a venerable gentleman was observed hovering about the parlor in which the National Association of Stove Manufacturers met, as if looking for some one—a long lost brother, it may be, or perhaps a wayward son. He reminded one who observed him of old John Burns at Gettysburg, who seemed the incarnation of ancient history, and of him, as of Burns, it might be said that
>
> The past of the nation was battling there—
>
> or, at least, was ready to do battle if occasion offered. He was subsequently identified as, &c.

That I had rather write this than have it written of me by some flippant young reporter of 35 or thereabouts goes without saying. In fact, I should not write it of myself if I did not feel quite sure that those for whom the matter has any interest whatever will be apt to say of it, as Mark Twain telegraphed of the premature announcement of his death, "The report is greatly exaggerated." To renew acquaintances of years ago was a delightful experience, and if it gave others half as much pleasure as it gave me—but that is scarcely to be expected.

I attended the meeting with mingled sensations of hope and fear. So long a time had elapsed since I was in some sense the storm center of stove trade agitation, and managed to stir up some sort of disturbance about once a week, that I was warranted in hoping that I was kindly forgotten. The fear which possessed me as I grasped one after another the friendly hands of old associates and companions was that I should find myself even less kindly remembered than I could wish. Those whose reading has tended in the direction in which mine has found congenial pasturage (aber nit) will recall that in due course there succeeded to the double ureas crown of Upper and Lower Egypt a Pharaoh who knew not Joseph; in consequence of which lamentable ignorance on the part of said Pharaoh all that remained for said Joseph was to "go 'way back and sit down."

But to me, as no doubt to the other Joseph, there remains a possession of pleasant memories. At the birth of the association the venerable John S. Perry of Albany was chief obstetrician, but I was his assistant, and had no light share of the labors and anxieties of the occasion. It was, on the whole, a very satisfactory accouchment, and by evening both mother and child were doing as well as could be expected. During its infancy and youth I helped to nurse it into vigorous health, and in connection with its early education I perhaps assumed a function somewhat larger than was necessary or desirable. For this however, I am somewhat less accountable than were the gentlemen who were the first presidents of the association, and who, in the absence of other and sure dependences, were in the habit of corresponding with me for a month or six weeks in advance of each meeting to make certain that I would be there and prepared to make an address or read a paper on some topic of immediate and exigent trade interest. Of these preliminaries the membership knew nothing; and for years it was the customary thing for the president, in concluding his address from the chair, to say (I think I can recall the familiar formula):

"We are fortunate in having with us to-day a gentleman who represents, as editor, the greatest and most influential commercial journals of this country; one whom we hold in high personal esteem and who has done much to secure for this association the recognition to which its importance entitles it, by making its proceedings known to all for whom they have interest. I have great pleasure in introducing to the convention Mr. James C. Bayles, editor of *The Iron Age* and *The Metal Worker*, and as I am sure we shall all be pleased to hear from this gentleman I will ask him to address the convention."

Whereupon the blushing recipient of this unexpected, if not unmerited, compliment would rise with proper and becoming, if quite transient, embarrassment, disclaim any preparation for the task assigned him, and proceed to expound some trade thesis with a fluency of thought and an elegance of diction quite inconsistent with the fiction of spontaneity in the case of one who always did speak extemporaneously to best advantage when he had been given from six days' to six weeks' notice that he would be unexpectedly called upon to say something.

The real work of the early conventions was not reached until the second day. I did not feel that it was any intrusion upon the time of the association to help the president fill out the first day, before the committees had made their reports or a programme of business had been arranged. There was really nothing else to do, and had I failed to respond to the appeals made to me to assist in giving the members something to think about in the opening hours of the session I should have made but a poor return for the many courtesies and compliments of which I was the recipient. To turn back through old files of *The Metal Worker* and read again my essays on the principles of art in stove ornamentation, the meretriciousness of nickel trimmings, the basic principles of design violated in the "pump log" base burner, and all that sort of thing, is great joy. President Perry had the curious and unusual faculty of getting mad by degrees. For weeks after one of these addresses, which unintentionally, but inevitably, tended to discredit the Argand type, of which he was the Prophet and High Priest, he would keelhaul me in sarcastic correspondence, the tone of which warranted the belief that if he had known how to swear he would have found great relief therefrom. But before the next meeting came round he would send an irresistible appeal for my co-operation in making it interesting, and the same little comedy would be enacted over again. One may talk of these things long after without violating any confidences. Few, if any, of the earlier presidents of the association are now living, and a majority of those who were then the promising youngsters of the trade and are now gray bearded veterans probably knew very little of what transpired behind the scenes, but may find my reminiscences amusing. Of the service I rendered to those who sought to build up the association in strength and influence I am frankly proud. My contemporaries, with whom my recollections of the stove trade are inseparably associated, were men who merit, and I doubt not hold, high places in your Parthenon, upon whose walls their names should be writ large in letters of gold, Perry, Rathbone, Ransome, Eddy, Phillips, Littlefield, Magee, Jewett, Hill, Tefft, Bradley, Sheppard, Price, Whitehead and many others of equal worth, if less prominence in stove trade councils, not forgetting dear old Filley, with a grip which could make a graven image curl up like a caterpillar on a hot shovel, but with the heart of a woman—the man who could face without flinching honorable obligations which would have shaken the courage of a millionaire, but who, when he had liquidated his indorsements, like the honest man he was, and was given an expression of the affection and respect of his associates in the loving cup presented to him at the Niagara meeting, collapsed in not unmanly tears and bid me make the response for which he could find no fitting words. None can recall this grizzled old veteran as president without a smile which extends from the facial muscles to the heart strings. I remember at one of the meetings at which he presided, a motion to sustain prices was offered, accompanied by a demand for a rising vote; and when debate was ended and a vote was in order, the president said in all simplicity: "Will the convention please rise?" Filley was no parliamentarian, but he was a good man and none joined more heartily than he in the laughs to which his errors gave rise.

I may also say without violation of confidence that I had much to do with the preparation of the addresses from the chair, which were the platforms of the earlier campaigns of the association. Frankly, I never wrote any of them, but in a good many instances I edited them in manuscript, planted the flowers of rhetoric in their waste places and made sure that there existed between verbs and nouns the agreement for which a prejudice exists among those who affect English grammar. None of these gentlemen were illiterate. They were wise and thoughtful men, clear headed and practical, but not all of them had gained the polish of the drawing room during the years when they were powdered with the facing of the foundry; and to sandpaper and shellac their addresses was a pleasure. In a word, it fell to my lot to be the "literary cuss" of the association, and if my style was not recognized in many and widely diverse contributions to its proceedings during its first ten years of its useful life, it was because I was afraid it might be, and took pains to avoid it. These original leaders of the movement were my friends and contemporaries, and as I recalled them in the company of their successors I was reminded that

> When musing on companions gone,
> We doubly feel ourselves alone.

But if the individual withers the times are more and more. When I took a programme of the order of business for the 1902 meeting and read over the topics for discussion and the names of those, or at least some of those, who were to discuss them, it was like listening to familiar music—each passage suggesting that to follow. If you will pardon the seeming egotism of the assertion, which is not wholly a pleasantry, I venture to say that from what I can remember of what was said and written on these subjects, with one exception, 25 years ago, I could have taken part in their discussion acceptably; and without drawing upon a single fact learned in the interval, could easily have avoided creating a suspicion that my information was not strictly contemporaneous. What percentage should pattern expenses bear to annual sales? Bless you, my dear young friends, your fathers were as near a satisfactory solution of that problem 30 years ago as you are now—nearer, perhaps. Is not co-operation as necessary in one market as in another? It seemed so in 1873, and annually ever since. Cannot some uniform rule of fixing selling prices on different types and grades of stoves be adopted? For useful views on this subject turn back to the transactions of any one of a dozen annual and semiannual meetings between 1877 and 1885. Stove nomenclature! Its literature is likely to be coterminous with the stove trade. To what extent should the manufacturer uphold the dealer in guaranteeing stoves? Is there anything to be said on this subject which has not been said many times?

In its present imminent aspects, consolidation is probably of more interest than ever before. Frankly, however, I doubt if any argument could be found for or against it which was not thrashed out 12 or 13 years ago. Those who attended a meeting held in my room in one of the Detroit hotels some 12 years ago, will recall why a strong national stove trust, with a chain of representative works extending from New England beyond the Mississippi, was not then formed. Had it been it would have now been one of the strongest and most prosperous of American industrials. There were more hard and fast options in bundles on the table at that conference than I imagine have ever since been secured. Hence my confidence that there was not one subject up for consideration at the New York meeting of 1902 which could not have been discussed in the light of ancient history as well as with an intimate knowledge of current events. I do not say this disrespectfully. It only shows that through the ages one unceasing purpose runs, that the natural laws of trade are eternal and that truth is perennial. Each generation has to learn the multiplication table for itself, and what are problems worn to rags for the passing generation of stove manufacturers are new and exciting problems for the young men who have their wisdom to gain in the school of experience.

But to listen to these castanean questions, and to hear obvious propositions debated in all seriousness, made me restless, and for the first time in a good while I was sorry to find myself merely an onlooker. Perhaps my feelings can best be expressed by recalling a pleasing and instructive incident which happened on a Southern railroad during one of my trips through that section. The train had been bumping along at its usual perilous speed of 11 miles an hour, and the passengers, tired, dirty and hungry, organized a syndicate to curse the president, the directors, the superintendent, the general passenger agent and so on down to the rear brakeman, and derived much satisfaction therefrom. It was noticed, however, that one passenger held his peace. His reticence disturbed the harmony of the concert of blasphemy, and at last it was decided to appoint a committee to wait upon the reticent passenger and demand the reason for his silence. "Well, gentlemen," replied the stranger, "I would exceedingly like to join you, as my sympathies are wholly with you; but really, in view of the fact that I'm traveling on a pass, it would not be quite delicate to say what I think, notwithstanding the fact that I have a vocabulary of my own, which would be useful at the moment. However, if this sort of thing keeps up much longer, I'm —— if I don't get off at the next station and buy a ticket, just for the pleasure of joining you all."

Nunc pro tunc? Oh, yes. I supposed you knew what that signified. Well, it is a phrase in law Latin, meaning literally *now for then*, and is applied to proceedings brought or an action performed at a date subsequent to the assumed date—the assumption being a legal fiction, of which there are many. Under the pretext of the annual meeting of 1902 I have discussed, *nunc pro tunc*, the meetings previous to 1882. This may not be good journalism from a newspaper point of view, but it is no end of good fun; and, after all, of what use are memories if one cannot use them for his own pleasure?

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Lyman S. Baker, Camden, Mich., manufacturer of the Economy Furnace, informs us that he has a new catalogue in preparation and will be glad to furnish copies to those in the Furnace trade who apply for them.

THE STOVE FOUNDERS' NATIONAL DEFENSE ASSOCIATION.

In accordance with time honored custom, the Stove Founders' National Defense Association held their annual meeting on the day preceding the gathering of the National Association of Stove Manufacturers. It was the seventeenth annual convention. The meeting occupied the whole of Tuesday, and is stated to have been one of the most interesting in the experience of the organization. The attendance was the largest in the history of the association, numbering about 60. The number present was, in fact, greater than the number of establishments embraced in the membership, several companies having more than one representative present.

President Chauncey H. Castle of Quincy, Ill., presented his annual report, in which he reviewed the events of the year, going into the history of such labor troubles as had occurred with the necessary detail to enable those present to understand what had been accomplished. Happily, these troubles had not been of great importance. The annual meeting is the only occasion upon which the members are fully advised as to matters of this character, as for obvious reasons the information regarding these delicate questions is not widely disseminated. As this organization deals with matters pertaining to labor only, acting in the capacity of a committee of inquiry, conciliation and adjustment, whenever called upon to do so by any of its members, or by any organization of workmen with whom it may have agreements, its work is necessarily individual and, therefore, personal and confidential.

The president's report of work of this character accomplished during the year just past covered 33 large pages of close typewriting and referred to nearly 100 "issues" that had been brought up for attention, all of which were adjusted without serious trouble or expense or are now in process of adjustment. Referring to the general condition of the affairs of the association, Mr. Castle says:

"The membership has largely increased; its financial condition is shown to be entirely satisfactory; thorough harmony prevails among its members, and its plan of procedure has been demonstrated to be advantageous and satisfactory to employees as well as to employers, so that workmen in departments of the stove manufacturing business, other than with whom they have agreements for conciliation, are now asking for such, to the end that the agreed-upon plans of adjustment may be applied."

The death of George H. Holland of St. Louis during the year left a vacancy on one of the district committees, which President Castle filled at the time by the appointment of Ralph S. Buck, also of St. Louis. Mr. Buck's appointment was ratified by the association, who elected him to serve for the ensuing year. The district committees were enlarged by the addition of Stanhope Boal of Piqua, Ohio, and Samuel R. Baldwin of Pittsburgh, Pa.

The association added nine to its list of members during the year. That the affairs of the association are running along very satisfactorily may be inferred from the fact that the old officers were re-elected and a hearty vote of thanks was given them for their efficient services. The list of officers stands as follows:

President, Chauncey H. Castle, Quincy, Ill.

Vice-President, Henry Cribben, Chicago.

Treasurer, Abram C. Mott, Philadelphia.

Secretary, Thomas J. Hogan, Chicago.

General Executive Committee: Chauncey H. Castle, Quincy, Ill.; Jeremiah Dwyer, Detroit, Mich.; Henry Cribben, Chicago; Abram C. Mott, Philadelphia; Grange Sard, Albany, N. Y.; N. H. Burt, Leavenworth, Kan.; Lazard Kahn, Hamilton, O.; John A. Roe, Pittsburgh, Pa., and D. McAfee, Quincy, Ill.

THE PITTSBURGH STOVE & RANGE COMPANY of Pittsburgh, Pa., have recently increased their already large force of salesmen by entering into contracts with George J. Buchanan, who will sell the Good Luck line in Illinois and a portion of Indiana; Z. W. Morris, who will represent them in Northern Texas, Missouri and Oklahoma, and Thomas R. Boss, who will present the merits of their extensive line of Stoves, Ranges and Hot Air Furnaces for the consideration of the Stove dealers in Iowa.

The New York Office of the Utica Heater Company.

For the purpose of better serving their customers in New York City and vicinity the Utica Heater Company of Utica, N. Y., have opened an office and salesroom at 106 and 108 Beekman street. During the past month this four-story building has been thoroughly overhauled and splendidly arranged for facilitating the sale of the goods manufactured by the company. On the first floor will be displayed the popular line of Superior heaters, also the Imperial vertical sectional and the Auburn round steam and hot water boilers. These goods will be so arranged on the sample floor that their construction and operation may be readily understood by prospective purchasers. The Robert Campbell Heating Company, heating engineers and contractors, have offices on the sample floor and will make a specialty of these goods in their contract work in the vicinity of New York. William Kerby, who also has offices on the first floor, will look after the requirements of the trade in the hot air furnace line. The third and fourth floors have been arranged as workshops, while the basement and other floors will be utilized for carrying a stock of goods for prompt shipment and quick delivery in the vicinity of New York.

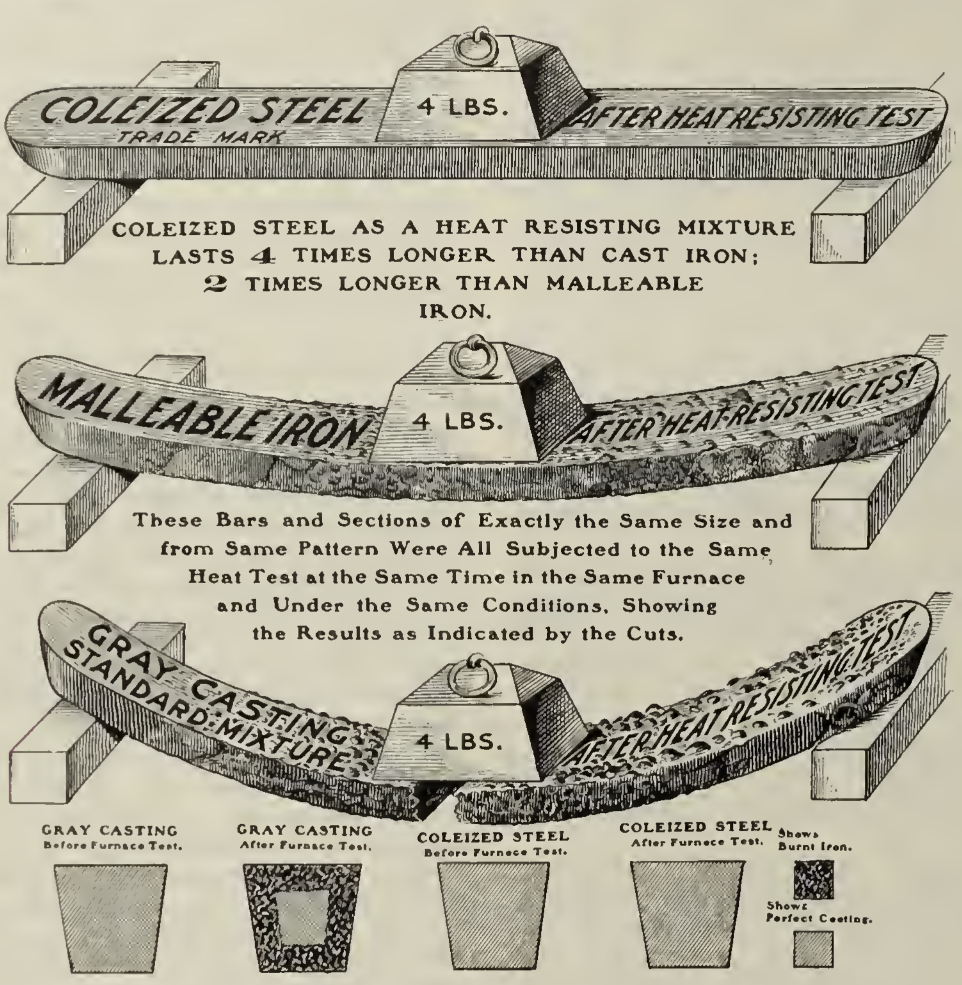
The necessity for this enterprise will be recognized when it is known that the Superior furnaces and Utica heaters now comprise seven distinct types and designs, with a large number of sizes running from heaters with 28-inch casings and 18-inch fire pots to 62-inch casings with 34-inch fire pots. These heaters are mounted either in steel plate or cast iron and are adapted either for brick setting or portable casing. The construction adapts this line to meet all climatic or fuel conditions. The Imperial vertical sectional steam and hot water heaters are made with several widths of grate and an indirect flue and are adapted for large and small work. The Auburn boiler, which is well known to the trade, is made either as a magazine boiler or as a surface burner, and being offered in a number of sizes is adapted for a variety of buildings. The company present this as a very complete line of heating apparatus, especially adapted to the requirements of the Eastern trade. Heating contractors are invited to call at the new salesroom and make a personal inspection of the company's new goods. W. H. Switzer, vice-president of the company, has been in New York City during the past week rendering his assistance in the arrangement of the samples and the utilizing of the space in this new emporium of heating goods.

Syracuse Heater Catalogue.

The catalogue of the Syracuse heater patented by C. B. Howard and manufactured by the Syracuse Heater Company of Syracuse, N. Y., has just been issued. It consists of 24 pages bound in a blue cover, and printed in two colors. The heater is rectangular in form, designed to use a galvanized iron casing. It consists of a cast iron chamber which incloses a fire box and ash pit section. This chamber is rectangular in plan, while the cross section is of oval form. It is corrugated both for the purpose of giving strength and to present a large expanse of hot surface with which the air must come in contact in passing through the heater. The upper portion of this cast iron corrugated shell is exposed to the direct rays of the fire, while the products of combustion rise and play against it before they go down under the ash pit and travel to the final smoke outlet, the construction providing for both a direct and indirect draft. These heaters are made in a variety of sizes. During the past winter they have been tested in several States, and testimonial letters are presented which show the satisfactory results obtained.

The Coleized Steel Hot Blast Range.

The Cole Mfg. Company of Chicago will shortly bring out a new range which they will name the Coleized Steel hot blast range. The company claim that this range has a greater number of novel features in its construction than any cooking device put on the market during the last 15 years. One of the most important of these new ideas is the use of a newly invented metal, in the place of gray cast iron, in the fire box linings and other parts which are subjected to great heat. This new metal is named "Coleized Steel," and consists of a special mixture prepared according to a secret formula perfected by President E. C. Cole of this company. This metal has been subjected to a series of tests in comparison with standard gray iron castings and malleable iron castings. The belief is generally entertained that malleable castings are more likely to warp when subjected to great heat than gray iron castings. In the course of his experiments Mr. Cole ascertained that if malleable castings were made of the same weight as gray iron castings their heat resistance would be considerably greater. The result of his comparative tests is herewith illustrated. A gray iron casting in the form of a grate bar, after having been subjected nine days to a furnace test, was found to have retained not over one-third of its sectional area as a solid casting, whereas the Coleized Steel cast in the same form precisely and subjected to the same test was found in perfect condition and of such strength that it could hardly be broken when hammered on an anvil. A gray iron casting, heated slightly beyond red heat, was easily shattered when struck on the anvil, while the Coleized Steel acts more like wrought iron when subjected to such a test, being very tough. The Coleized Steel, according to the experiments made, is found to have four times greater heat resistance than standard gray iron castings and two times greater heat resistance than malleable iron. These experiments are especially interesting, as it is believed that nothing has been attempted in the past in making special mixtures of heat resisting quality, although a great deal has been done in making castings to secure strength and toughness, such as desired for car wheels and other purposes involving severe service.


COLEIZED STEEL
TRADE MARK
4 LBS.
AFTER HEAT RESISTING TEST
COLEIZED STEEL AS A HEAT RESISTING MIXTURE LASTS 4 TIMES LONGER THAN CAST IRON; 2 TIMES LONGER THAN MALLEABLE IRON.
MALLEABLE IRON
4 LBS.
AFTER HEAT RESISTING TEST
These Bars and Sections of Exactly the Same Size and from Same Pattern Were All Subjected to the Same Heat Test at the Same Time in the Same Furnace and Under the Same Conditions, Showing the Results as Indicated by the Cuts.
GRAY CASTING STANDARD MIXTURE
4 LBS.
AFTER HEAT RESISTING TEST
GRAY CASTING Before Furnace Test.
GRAY CASTING After Furnace Test.
COLEIZED STEEL Before Furnece Test.
COLEIZED STEEL After Furnece Test.
Shows Burnt Iron.
Shows Perfect Casting.

Comparison of Coleized Steel with Malleable and Gray Iron Castings.

Another special feature of this range will be a grill, 7 x 14 inches, enabling the housewife to broil and toast with the commonest soft coal equal to any such work that can be done over a charcoal broiler. This feature, as it does not interfere with other cooking, will add nearly 25 per cent. to the capacity of the range. Another point is doing away with the end wood feed door, which is so seldom used that it is practically a useless attachment to ranges. Another new idea is the method of heating water, both in the reservoir and the water back, the water back being entirely separate from the fire box, utilizing the waste heat for this purpose so as to be of value in cooking or baking. Altogether there are over 23 distinct novel features of construction in this range, and the manufacturers predict for it as great a success as has been achieved by their hot blast and air tight heaters. They are very confident that the use of Coleized Steel will accomplish a revolution in stove construction.

The company have acquired a high reputation as originators of stove specialties. If their new range proves to be the great success which they expect, they will add still more to their reputation. The new range will be thoroughly tested in every respect before it is offered to the trade. The company have patented the name "Coleized Steel" as their trade-mark.

The Charter Oak Stove & Range Company of St. Louis, Mo., have completed arrangements for the transformation of their lighting and power plant. The new plant will consist of a 160 horse-power Ideal engine directly connected to a 100 kw. Triumph generator. This system will furnish light and power for the company's entire plant. Six motors for the different departments are also being supplied by the Triumph Electrical Company. The lamp requirements of 18 inclosed arc lamps for the foundry and 427 16-candle power incandescent lamps for the other departments will shortly be contracted for. This new power plant is made necessary by the large extension to the company's business. It will give the Charter Oak Stove & Range Company one of the most up to date lighting and power plants possessed by any large concern in the country. The old engines will be retained for use in emergencies.

The H. Wetter Mfg. Company's New Plant.

On January 19 last the stove plant of the H. Wetter Mfg. Company, at Memphis, Tenn., was destroyed by fire, and exactly three months from that date, on April 19, the company so managed as to be able to start up the new plant. Without any loss of time after the fire the management at once began to make a careful investigation of different locations in the United States, and many cities and towns offered tempting inducements in order to secure the location of the industry. After careful consideration it was determined that no place in the country presented as favorable advantages as did South Pittsburg, Tenn., situated in the heart of some of the largest iron and coal fields in the world. Through their agents the company purchased the plant at that place, which was built several years ago, during the "boom" times, at a cost of $250,000. Being complete in all its details, but a short time was required in getting it into running order. The property extends over an area of 10 acres, and the plant consists of five modern buildings, two being three-story structures, 60 x 250 feet, and a three-story building, 50 x 150 feet, and two one-story buildings of 200 x 200 feet and 60 x 60 feet, respectively.

The general offices and warehouse of the concern will be located in Memphis, and they will have a Western distributing house at St. Joseph, Mo. The company have a fine catalogue now in the hands of the printers, which will be mailed shortly to the trade. Their traveling representatives are now starting out on their regular trips taking orders for the Superb line of stoves and ranges for summer and fall delivery. The largest pattern making concerns in the country have been pushed to turn out new patterns for the concern, which will be modern and up to date in every respect. A general view of the company's new plant is given in another part of this issue.

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UTILIZING WASTE HEAT.

BY INGENUITY.

Some of the readers of *The Metal Worker* may be interested in a method of utilizing heat that would otherwise go to waste that I have introduced into the house in which I live. In my section of the country a large number of people live in what are termed two-family houses—that is, houses containing complete sets of apartments, on the first and second floors, entirely separate and distinct from each other. This house was built by me and I appreciated the fact that unless I utilized the heat that went to waste from the cook stove of my tenant on the first floor, no benefit would be derived from it. When the house was erected I provided 8 x 8 inch flues for the kitchen in both sets of apartments. From the pipe hole in the kitchen stove on the first floor I ran clear up to the top of the chimney a heavy 6-inch smoke pipe, and just above the baseboard in the dining room of the apartment on the second floor I placed an 8 x 12 inch hot air register, while, just over the top of this register, I completely shut off the flue. I then arranged for air to enter the base of the brick flue so that it could pass up around the hot smoke pipe and flow out into my dining room. The result has been that my dining room has been kept comfortably warm without any expenditure for fuel on my part, and as far as I can learn, without any disadvantage to my tenant on the first floor.

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The Quincy Foundry & Novelty Company, Quincy, Ill., are pushing with a great deal of enterprise the merits of their Noxall Steel Cook Stove, which is intended for burning coal or wood as a fuel. The body is made of heavy polished blue steel, lined throughout with asbestos millboard, and the Stove has large pouch feed for coal, square oven finished in aluminum, cast flue back and flue strips, spring balanced oven door, extension fire box for wood and large scoop ash pan. It is made in several styles and sizes, some of which are illustrated in the catalogue which the company have issued. They also call attention to their Air Tight Heaters for wood, of which they make 65 styles and sizes. Some interesting references to these goods will be found in the company's announcement presented this week in another part of this issue.

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AIR STILL "IN ROTATION."

Notwithstanding the fact that in previous articles about furnace work we have expressed a desire to present practical information rather than critical contributions, there has been a manifest tendency with some of our contributors to controversy over opinions rather than to the presentation of experiences. We are still strongly of the opinion that if the same energy that is devoted to criticism and controversy was expended in encouragement and explanation, greater benefit would be derived by the furnace trade. We therefore take this opportunity to again point out some facts in reference to heating systems.

In the first place, so far as large buildings are concerned, a well organized effort is being made in several different States to secure the enactment of laws which will make compulsory the ventilation of schools, churches and other public buildings. This is a recognition of the need of a large quantity of fresh air wherever a considerable number of people are gathered together. Those who are opposed to the "rotary system" of heating may seize upon these facts as a justification of their views. They must not lose sight, however, of the use of the mixing damper in many such heating systems, which, in many instances, is so arranged that the air from out of doors may be shut off, and the air in the building kept in circulation previous to the assembling of the audience. This is common practice with the most advanced engineers, where the conditions will permit the justification of this practice, in view of the fact that by this method a building can be heated to the required temperature with a much less expenditure of fuel than if all the air was taken from out of doors.

So far as the heating of residences is concerned, where the doors are open through the building, as is quite frequently the case, there is a very large volume of air in proportion to the occupants of the building, and a sufficient change to maintain a satisfactory atmosphere is held to be effected by the leakage around doors and windows and through the opening and closing of doors. Many who install the rotary system of furnace heating make provision to take the air from out of doors in the early fall and late spring, and only use the rotary system alone in extremely cold weather.

In view of these facts, some of the harsh criticisms which have been received have been softened before presentation to our readers. We hope that those who entertain different ideas from those expressed by our contributors will in future, instead of broadly condemning what they disagree with, explain in detail the basis on which their views rest, and that the controversial feature will be eliminated so far as possible from future discussions. This, we think, would be for the best interests of the whole trade.

In view of what has been said by previous contributors, we are constrained to afford "F. B. K." an opportunity to reply to some of the criticisms presented in *The Metal Worker* of April 26, on his article which appeared in *The Metal Worker* of April 5. He writes as follows:

> It appears that your correspondent from Minneapolis is going for me rough shod. I am always looking for improvement, but it seems that my friend in Minneapolis can say a great deal without giving much that is of benefit to the whole trade. I would ask why he did not give us something better if a rotary system is so bad. He quotes a system which I believe has been quite widely condemned, and now is very much modified when used. I would ask, however, where would you find a man that would pay what it costs to install such a system in a residence? I am of the opinion that he cannot be found in Ohio. I was not interested in the heating of public buildings, but was content to get information on heating residences, and I have never seen a residence where there was much objection raised to too much heat, for it is too frequently too cold in many dwelling houses. It is no trouble to get cold, fresh air when it is outside, considering the way houses are built in these days. The trouble is to hold enough warm air in the houses to keep them at a comfortable temperature.

This is largely due to an attitude of mind, on the part of the buyer, which it is difficult to control. He gets bids from everybody and accepts the lowest bid, regardless of whether the contractor has the necessary knowledge and ability, and can be relied on to furnish the material that will be required to properly heat the house.

I have just examined a furnace job where outside fresh air was used at first, but as the heating was unsatisfactory, an inside air pipe was taken from the hall. Yet it is not satisfactory, although double the amount of fuel is consumed that should be. The trouble with this job is the same as with many others that are put in by the cheapest man. The hot air pipes have an area of 475 square inches, and a 16-inch round pipe supplies the air from out of doors. This has an area of 201 square inches, while an 18-inch pipe is taken from the hall, which has an area of 254 square inches. It is no wonder that an air supply of 254 square inches will not fill hot air pipes having an area of 475 square inches, and that the windward side of the building is always difficult to heat. This is not the fault of either the outside air supply or the rotary system, but purely of the man who installed the plant. I think that if any one ought to be "caged," it is the man who is always hunting for a contractor who will do the job the cheapest, regardless of his ability to do a good job.

"Iowa" spoke about absorbing a barrel of water. I would ask him to make a sketch showing how he connects his water heater, also how he connects his cold air pipes. I would also like to see a complete plan of just how he installs a system in a residence. I use no water on any of my jobs unless my customer wants it. I have put in a number of rotary furnace systems and they gave good satisfaction. One of these is in a building erected by J. D. Van Deman, and occupied by Prof. W. E. Smyser, an Akron air blast furnace being used. This job has been so satisfactory that a similar furnace installed in the same way has been used in eight other buildings erected by the same owner, who once lived in a house having a furnace to which all the air supplied was taken from the outside. This man is a prominent lawyer, and, after living in one of the houses heated by me, he is not of the opinion that I should be "caged," but has expressed himself as having a disposition to sue the party for damages who installed his first heating system. I extend my respects to the Minneapolis correspondent, and assure him that Ohio is still a good State. I hope that I have not stepped too hard on anybody's corns, and trust that "Iowa," or some other furnaceman, will give us some of the kind of information that I should like to have.

Calculations for Furnaces Using Gas Fuel.

Our furnace readers will be interested in the following information presented by the Springfield Furnace Company of Springfield, Ohio, in reference to the Thompson gas furnace, manufactured by them, which is entirely different in construction from the plans followed in the manufacture of coal furnaces. This furnace has the heating surfaces increased in extent by many subdivisions in the combustion chamber and flues. The information given by the company is as follows:

Our furnaces are so radically different in construction from coal furnaces that we can, of course, give no dimensions of grate surface or of coal burned. In figuring out what will be required of one of our heaters, we pay no attention whatever to the matter of cubic feet of space heated, having reached the conclusion that this is a totally unreliable basis for calculating the amount of heating required. Our plan, and it is one that has worked out well when backed up by a reasonable degree of judgment in fitting up a furnace, has been to take the entire outside area of the building, including both sides and both ends and the entire roof area, and add these together to get the exposed surfaces in square feet. We divide this amount by ten, and get the total number of square inches of area required in the hot air pipes. But we find that even this rule cannot be depended on as a rule, because judgment has to be used in the matter of sizes of pipes according to their length and the number of bends in them. An 8-inch pipe extending perpendicularly up from the top of a furnace casing to a register will carry more hot air than a 12-inch pipe which is carried nearly horizontal for 20 or 30 feet.

With our furnace we have cut out entirely the use of the cold air duct, excepting where there is a cold air room in the cellar, and the duct is needed for that room. Our rule is that the cold air supply must exceed by 10 per cent. the total area of all the hot air pipes connected with the furnace. This practice has worked out very successfully with our furnace; but, as before stated, our furnace is constructed all through on such a radically different plan from any other furnace that we do not consider that rules which work well for us will be a success with others.

ODD PLATES

The Century Stove & Mfg. Company of Johnstown, Pa., with a capital of $100,000, were recently incorporated with the following directors: Rowland S. Wilson and Robert Monro of Pittsburgh and Edward C. Warren, John H. Waters and Samuel B. Waters of Johnstown.

The Fischer-Leaf Company, with office and foundry at Sixteenth and High streets, Louisville, Ky., have issued a folder calling attention to the Modern Arizona and Glen Arizona Square Oven Cook Stoves, which they have recently added to their extensive assortment of specialties. These constructions are of an attractive exterior and, the manufacturers say, possess features which distinguish them from the ordinary square oven Cook Stoves. Another specialty, to which the company invite attention by means of an eight-page pamphlet, is the Arizona Down Draft Heater, offered in radiator and oak styles. These heaters are handsomely ornamented, nickel playing a prominent part in the external decoration. They are intended for using hard coal, soft coal, slack or coke and embody the latest features.

The Essex Gas Stove Company, with office at 164 Market street, Newark, N. J., have recently been incorporated with a capital stock of $50,000. The incorporators are Samuel Stewart, S. W. Westervelt and Walter P. Lindsley.

The Wheeling Gas Stove & Range Company, who started on a small scale in Moundsville, W. Va., have decided to remove their plant to Wheeling, where operations will be conducted more extensively. A force of several hundred men will be employed and the plant will be thoroughly equipped with modern machinery.

The enameling department of the Thomas, Roberts, Stevenson Company, manufacturers of Stoves, Ranges and Heaters, Philadelphia, Pa., was badly damaged on the 12th inst. by an explosion, the cause of which is unknown. Two men were seriously injured, but the resulting fire was quickly extinguished without extensive loss.

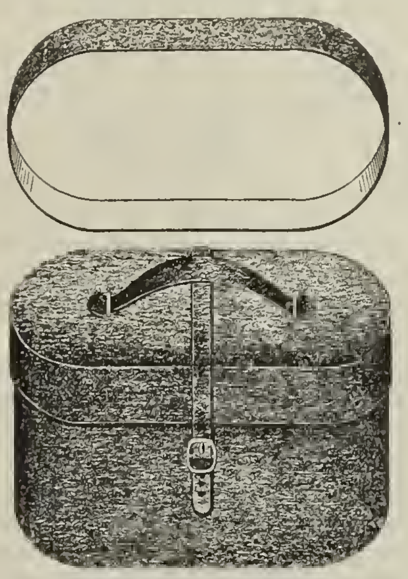
Floyd, Wells & Co., Royersford, Pa., are making several improvements to their plant to enable them to take better care of their growing business, among the most important being an addition to their pattern shop, for which a new two-story brick building, 30 x 45 feet, is being erected. Business conditions with them are reported to be in a very good condition, and the indications favorable for a record breaking season.

The Moncrief Furnace & Foundry Company, Atlanta, Ga., successors to the Moncrief Furnace Company, have recently enlarged their foundry and materially increased their productive capacity. The company not only are in a position to manufacture their Heaters in larger numbers, but also have facilities for making Brass, Hardware, and Machinery Castings. They are now installing a heating plant and closets in Berkeley, Va., also a heating plant on the mechanical system in the Second Presbyterian Church, Norfolk, Va. In addition they have several smaller contracts for points in the State of Texas.

The Standard Blue Flame Oil Gas Company have been incorporated under the laws of Delaware with a capital stock of $500,000. The Board of Directors will organize by electing officers in the near future, but a contract has been closed to build a new factory for the manufacture of Wickless Blue Flame Oil Gas Generators, as well as Steel Ranges, Stoves, &c., at Kankakee, Ill. Three buildings will be put up; one 50 x 200 feet, one 30 x 60 feet and a power house 40 x 50 feet, all to be constructed of brick and stone. Other buildings will be added as is demanded by the growth of the enterprise. The company expect to employ from 100 to 300 men during the first two years. Information comes from Kankakee that in consideration of the location of the factory at that place, the company are to receive a 5-acre site, 35 lots, and $5000 cash. The present office and factory of the company are at 58 West Randolph street, Chicago, and it seems probable that the salesrooms will remain at that point.

The Twentieth Century Ventilated Lunch Box.

The accompanying cut represents a ventilated lunch box, put on the market by the Reading Saddle & Mfg. Company, Reading Pa. The interior of the cover is shown above the lunch box, the two small circles indicating the location of the ventilators. The manufacturers state that the material used in the construction of the boxes is the best from a sanitary point of view. and that the protected ventilators in the lid cause perfect circulation of air. The boxes are made in three size, as follows: 8¼ x 4¼ x 4¾; 9¾ x 4⅝ x 5½, and 11¼ x 5¼ x 6.



The Twentieth Century Ventilated Lunch Box.

The following advantages are claimed by the makers over square cornered boxes: That the round ends prevent dirt lodging in corners, and allow the box to be thoroughly cleansed by lightly rubbing with a damp cloth or sponge; that there are no square corners to catch in clothing and therefore no scuffing as on square cornered boxes; that the water proof lining and special covering prevent grease showing on the outside, and that the shape of the box with rigid top and bottom causes it to be firm and to wear longer.

Ironsides Improved Tormay Oiler.

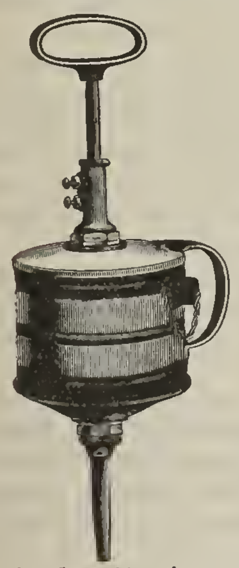


Fig. 1.—Ironsides Improved Tormay Oiler, ¾ Gallon Capacity.

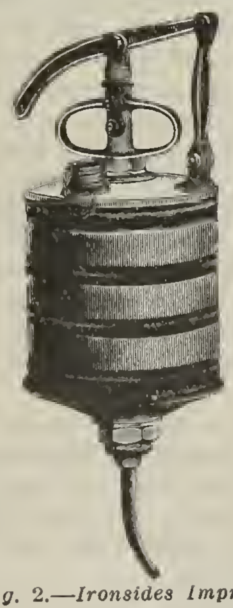


Fig. 2.—Ironsides Improved Tormay Oiler, 1½ Gallons Capacity.

The Ironsides Company, Columbus, Ohio, are manufacturing the Ironsides improved Tormay oiler. The device, which is herewith illustrated in two different forms for economically applying oil to working parts, is reputed to have had its origin in an operating department of pronounced wastefulness, and originally provided for the oiling of mine car wheels, but that its accredited benefits duly adapted it to the operating departments of the various classes of mining and other machinery and general manufacturing institutions wherever lubricants are required. A saving of as great as 50 per cent. in both labor and also oil is alleged to have followed its adoption in some of the larger coal mining properties. Not unlike other innovations, the earlier productions are said to have proven deficient in construction. In the oiler as now offered former inherent weaknesses have been eliminated and suggested improvements from the more experienced users incorporated, and it is described as an article of superior design, workmanship and great durability. The oiler consists of a central working barrel, containing a plunger and surrounded by an oil reservoir. Openings in the working barrel, sealed or unsealed, according to position of plunger, communicate with the oil reservoir. The adjustability of the stroke of plunger governs the quantity of oil forced at each operation. When not in use its contents are not only preserved from leakage, but also protected from dust and other impurities.

Oplex Coffee Mill

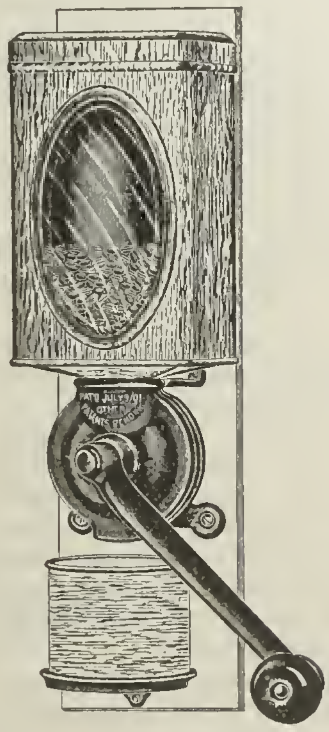


Fig. 1.—Oplex Double Grinder Mill and Canister.

Bronson-Walton Company, 1800 East Madison avenue, Cleveland, Ohio, for whom John H. Graham & Co., 113 Chambers street, New York, are direct representatives, are now introducing their Oplex coffee mill, as here illustrated. This is a square canister of sheet steel, lacquered inside to prevent rust and lithographed outside in antique oak design. The heavy oval glass is pressed into the front and held there by a steel band. The canister holds one pound of whole coffee practically air tight, and the contents are visible through the glass. A strong iron bracket holds the cup for receiving ground coffee. The cup is tin, lithographed outside to match the canister. The grinding parts, shown in Fig. 2, are machine finished so that they turn easily and smoothly, and the grinding nuts can be adjusted so as to grind from coarse to very fine. In operation the bean descends from the canister over the front grinder C and the rear grinder F and drops when ground into the cup below. Adjustment for the grade of coffee desired is obtained by turning the thumb screw at the back. By means of the double grinder the grinding capacity is increased two fold. The mill is varnished oak pattern and each one is packed in a carton.

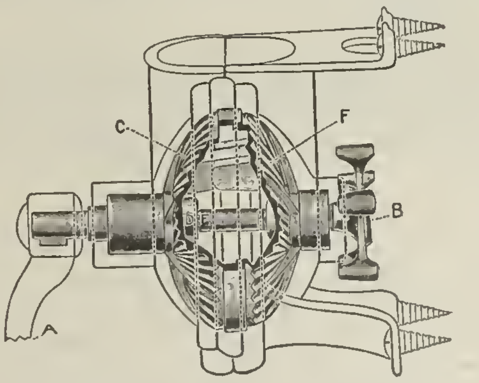


Fig. 2.—Sectional View of Double Grinder.

Stove and Hardware Dealers.

A. B. Neyhart, wholesaler and retailer of Shelf and Heavy Hardware and Stoves, Williamsport, Pa., is putting in a new plate glass front, and also building an addition, 19 x 61 feet.

L. C. Fisher and Geo. E. Smith have formed a partnership at Sprague, Wash., in the Hardware (Shelf and Heavy), Stove, Agricultural Implement, Harness, Vehicle and Sporting Goods business. The style of the concern is L. C. Fisher & Co. They have built a new store with 80 feet front.

Wm. Potts has sold his retail Shelf and Heavy Hardware, Stove, Tinware and Sporting Goods business in Salisbury, Mo., to Hunker Hardware Company, who will continue at the old stand. The company would be glad to receive catalogues, price-lists, &c., relating to the above lines.

W. W. Yokom has been succeeded by Yokom Bros. in the Stove, Tinware and Farm Machinery business in New Hartford, Iowa. The new firm are considering the advisability of entering the Pump, Bicycle and general repair business and would be pleased to have printed matter pertaining to it.

Fred. H. Taylor is successor to Taylor & Taylor in the Shelf Hardware, Stove and Plumbing business in Indianola, Iowa.

Ross Bros. have succeeded William Ross in the Hardware, Stove and Agricultural Implement business in Alden, Kan.

G. E. Snyder, Mt. Ayr, Iowa, has admitted a partner in his retail Hardware, Stove and Grocery business, and the style is now Snyder & Campbell.

Oklahoma Hardware Company, Oklahoma City, O. T., have been incorporated with a capital stock of $100,000. They will do an exclusively wholesale business in Shelf and Heavy Hardware, Stoves, Tinware, Agricultural Implements, &c. They are now erecting a modern warehouse, 75 x 200 feet, with a private railroad switch 200 feet long. They expect to have the warehouse completed before the end of May.

Reineke & White have succeeded Henry Reineke in the Hardware, Stove, Farm Implement and Sporting Goods business in Henryetta, I. T. The firm have doubled the amount of stock formerly carried and report a very satisfactory trade, as the new country is fast opening up.

Petersen & Schoening Company, Council Bluffs, Iowa, have been incorporated with a capital stock of $40,000, succeeding Petersen & Schoening in the wholesale and retail Hardware, Stove, Sporting Goods and Furniture business.

C. G. Dahlstrem & Son, Ceresco, Neb., are putting up a new brick building, 24 x 50 feet, two stories high, which they will occupy with their stock of Hardware, Stoves, Tinware, Agricultural Implements, Sporting Goods, &c.

The F. W. Brosig Hardware Company, Navasota, Texas, have succeeded F. W. Brosig and E. L. & C. C. Ahrenbeck. The capital stock of the new company is $50,000, the following being the officers: E. L. Ahrenbeck, president; J. W. Brosig, vice-president, and R. C. Terrell, secretary and treasurer. The company will carry on a wholesale and retail business in Shelf and Heavy Hardware, Stoves, Tinware, Agricultural Implements, Sporting Goods, Buggies, &c.

Chapman & Hills, Lorain, Ohio, have been succeeded by City Hardware Company, who have been incorporated with a capital stock of $20,000. They are dealers in Shelf Hardware, Stoves, Tinware, Farm Implements and Sporting Goods, also slating and sheet metal work, plumbing, heating, &c.

The Lisk Mfg. Company, Canandaigua, N. Y., have favored us with one of their new catalogues, covering their line of Enameled Steel Ware.

The plant of the White Mountain Freezer Company, Manchester, N. H., is being run night and day to keep abreast with the demand for the company's goods.

F. H. Loss, dealer in House Furnishing Specialties, has removed to new quarters at 43 Murray street, New York.

The Detroit Churn & Separator Company have begun the manufacture of their Combined Churn and Cream Separator at Grand River and McGraw street, Detroit, and are now turning out 40 machines a day. S. M. Shotwell is secretary of the company.

G. R. Westlake has purchased a Hardware business in Titonka, Iowa, and will increase the stock thus acquired. Mr. Westlake's line embraces Shelf and Heavy Hardware, Stoves and Tinware, Sporting Goods, Harness, &c.

The Kees Hardware Company, Beatrice, Neb., have been incorporated with a capital stock of $10,000 and the following officers: F. D. Kees, president; J. A. Kees, vice-president; F. E. Kees, treasurer and manager, and Robert B. Smith, secretary. They are successors to the business of F. D. Kees, who by this change in the conduct of the business will hereafter be able to devote more time to his manufacturing interests. The company carry both Shelf and Heavy Hardware, Stoves, Tinware and Sporting Goods.

E. J. Fuller, dealer in Hardware, Stoves, Agricultural Implements, Sporting Goods, &c., Kendall, N. Y., has lately moved into a new store.

Pasadena Hardware Company, Pasadena, Cal., have been incorporated with a capital stock of $20,000 and the following officers: Joseph Welsh, president; R. S. Roberts, vice-president, and W. S. Windham, secretary and treasurer. The company handle Builders' and House Furnishing Hardware, Stoves, Agricultural Implements, Chimney and Sewer Pipe and Plumbers' Supplies.

Haggard & Son have lately commenced business at Sarcoxie, Mo., as dealers in Shelf and Heavy Hardware, Tinware, Sporting Goods and Mining and Blacksmiths' Supplies.

Barr & Keshler have disposed of their Hardware, Stove and Sporting Goods business in Pleasanton, Iowa, to A. M. Haag.

Lester Bros. have succeeded M. Lester in the retail Hardware, Stove, Seed and Grocery business in Hale, Mo.

Chas. M. Witter has succeeded Witter Bros. at Guthrie, O. Mr. Witter carries a general line of Hardware in connection with Harness, Tinware, Dry Goods, Groceries, &c.

R. Scott, dealer in Hardware, Stoves and Factory Supplies, Muncie, Ind., has just taken possession of a new building, by which his facilities for carrying on business have been materially improved. The building is 30 x 110 feet and has two stories and basement.

Gray & Mudgett are a new firm in the Hardware, Farm Implement and Plumbing and Tin business at Essex Junction, Vt. The firm are composed of H. N. Gray of Cambridge, Vt., who has been in the Hardware business at that point for the past 20 years, and R. O. Mudgett, who has been Mr. Gray's head clerk for 12 years. Mr. Mudgett will manage the store.

W. D. Post has sold his Hardware, Stove, Farm Implement and Sporting Goods business in Slaterville Springs, N. Y., to W. A. Ferguson, who will continue at the old stand.

O. D. Sykes, who has been in the retail Stove, Tinware and plumbing business at Seymour, Conn., for the past 20 years, has sold out his business to William J. Culverwell and Luke Burns, who have been in his employ for some time, and both of whom are experienced in the business.

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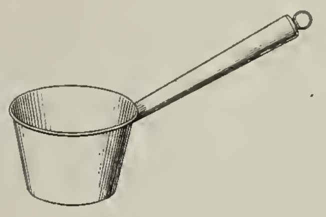
The fire loss of the United States and Canada for the month of April, according to the reports of the New York *Journal of Commerce*, amounted to $13,894,000, as compared with $12,056,000 in the preceding month, and $11,352,000 in April, 1901. The total loss for the first four months of the present year is $61,994,000, being $5,000,000 increase over the figures for the corresponding period of last year and $4,500,000 less than the first four months of 1900.

PATTERN FOR DIPPER WITH HANDLE

(Without Allowance for Laps.)

A dipper with handle, such as is illustrated in Fig. 1, can be made of tin, copper or galvanized iron, according to the use for which it is intended. The method of obtaining the patterns for such a dipper is shown in Fig. 2.

First draw any vertical line, as A B, upon which place the hight of the dipper, as shown by C D. At right angles to C D draw C E and C F, representing the top diameter, and D H and D G, representing the bottom diameter. Connect E and H and extend the line until it intersects the center line at I. Now, using C as center and C E as radius, describe the semicircle or half plan, which divide into equal spaces, as shown by the small figures 1 to 7. Then, with I as center and radii equal to I E and I H, describe the arcs E J and H K. Now, starting at the point E or 7, step off twice the amount of the spaces contained in the half plan, as shown by the small figures 7 to 1 to 7 on E J. From J draw a line to I intersecting the arc H K at K. Then will E H K J be the pattern for the dipper in one piece, to which allowance must be given for seaming and wiring. If the pattern is desired in two pieces, then from 1 draw a line to the center I, intersecting the arc H K at L.



Pattern for Dipper with Handle.—Fig. 1.—Perspective View of Dipper.

M, in Fig. 2, shows the handle, with button and ring N. For the pattern for the handle proceed as is shown in diagram S, in which the handle is shown slightly enlarged by O P. Draw the center line of the handle 3 3′, extending it indefinitely toward R in its relative position to the side of the dipper, 1′ T. At right angles to R 3 draw the line 1 5 at its proper distance from 1′, which will represent the diameter of the handle at the top. From the points 1 and 5 draw lines to the apex R, intersecting the side of the dipper 1′ T at 1′ and 5′. Now with W as center describe the semicircle 1 3 5, which divide into an equal number of parts, as shown by the small figures 1 to 5. At right angles to 1 5, and from the points 2, 3, 4, draw lines intersecting the line 1 5, as shown. From these points of intersection draw lines to the center R intersecting the side of the dipper 1′ T at 1′, 2′, 3′, 4′ and 5′. From these intersections and at right angles to the center line R W draw lines intersecting the side of the handle 5 5′, as shown. Now, with R as center and R 5 as radius, describe the arc 5″ 5‴. From 5″ draw any line, as 5″ R. Now, starting from 5″, set off the stretchout of twice the amount of the semicircle W, as shown by the small figures 5″ to 1″ to 5‴. From 5‴ and all the small figures contained in 5″ 5‴ draw lines to the apex R, as shown. Then, using R as center and radii equal to the various intersections on 5 5′, draw arcs intersecting similar numbered lines in the pattern, as shown. Trace a line through the points of intersection thus obtained. Then will U V 5″ 5‴ be the pattern for the handle.

It will be noticed that the pattern for the handle has been obtained to fit against a plane surface, as 1′ T, while in reality the handle butts against a round surface in plan, thus forming an intersection between two cones of unequal diameter. In this particular case it is better to use a short rule of this kind than to go to the time and trouble of working out a problem, for in practice the difference in the pattern is hardly noticeable. When handles of this kind are developed the rule given is practical for all purposes.

When soldering the handle to the dipper it has a tendency to break when the dipper is in use. This can be avoided by adding a lap in the form of a leaf, as shown in the pattern by X. In the pattern *a* and *b* represent two holes punched to correspond to the thickness of the wire used at the top of the dipper. In diagram Y is shown how the handle is attached; *d* representing the body of the dipper with the wire at the top, as shown, while *e* is the handle with the leaf X′ turned toward the inside and soldered.

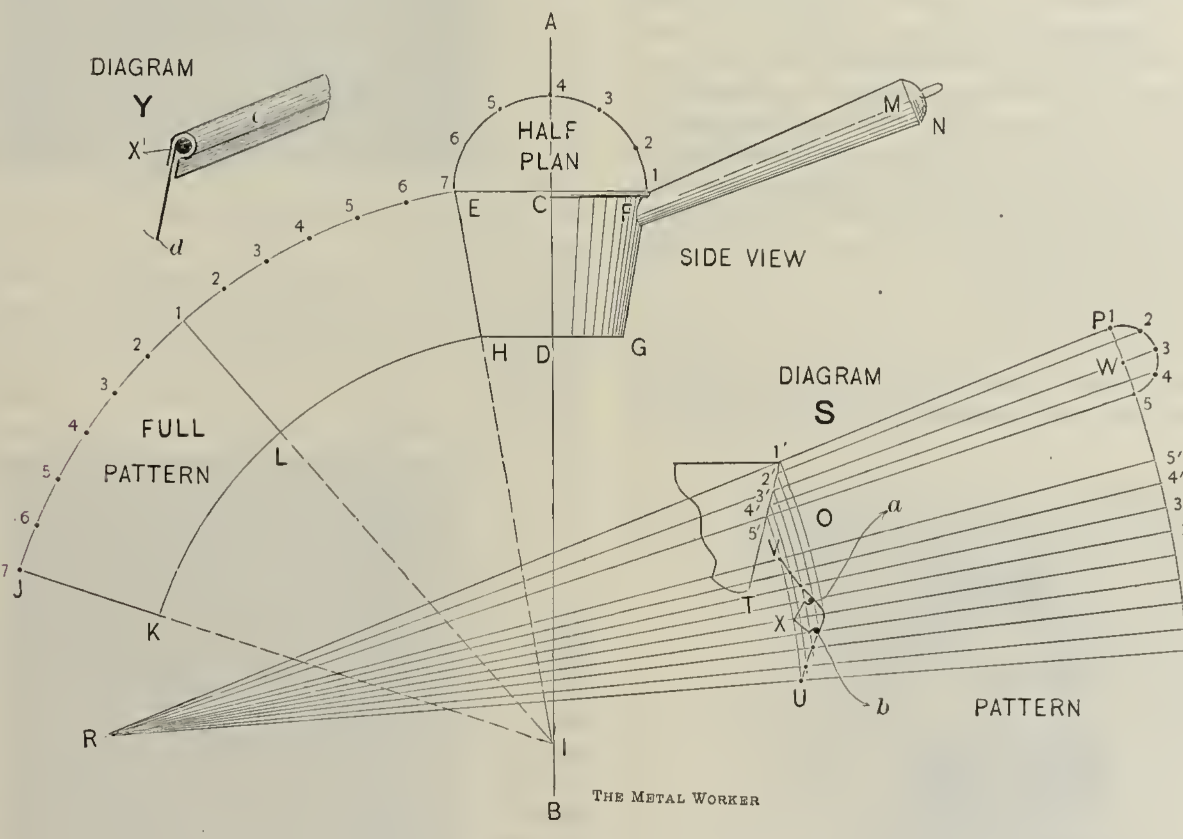


Fig. 2.—The Pattern for Dipper.

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TINSMITHS, cornice makers and all who have to do with soldering will be interested in the little pamphlet issued by the Grasselli Chemical Company, Cleveland, Ohio, devoted principally to the Eureka Soldering Flux. With this pamphlet comes a circular of the Snowflake Soldering Salts. The company also make an extensive line of Chemicals and Acids, useful to nickel platers and foundrymen who have occasion to clean castings.

ANNUAL MEETING OF TROY ROOFERS' AND METAL WORKERS' ASSOCIATION.

The third annual meeting, election of officers and banquet of the Master Tin Roofers' and Metal Workers' Association of Troy, N. Y., and vicinity was held at the rooms of the association, in that city, on Wednesday evening, May 7. The meeting was largely attended, and a very enjoyable time was spent. The reports of Treasurer W. A. Sherman and Secretary Fred. T. Ham showed the organization to be on a solid basis. Communications from similar organizations in different parts of the State were read and the prospects of a State organization were discussed. Several applications for membership were received. The annual address of President James Hamil was warmly received. The election of officers for the ensuing year resulted as follows:

PRESIDENT FRED. T. HAM.

President, Fred. T. Ham.
Vice-President, David White.
Treasurer, W. A. Sherman.
Secretary, Harry Packard.
Trustees: H. D. Sweet, A. McCoubrey and Leo Rivers.

The banquet proved a thoroughly enjoyable affair. A well selected *menu* was provided by the committee, and the speakers to the various toasts secured the attention and interest of the diners. David White acted as toastmaster, and introduced Edward Manogue, who spoke on "The Object and Benefits of a Master Mechanics' Association," and W. A. Sherman, on "The Relations that Should Exist Between Employer and Employed." Mr. White himself treated in a happy way "The Fraternal and Social Benefits of Our Organization."

EX-PRESIDENT JAMES HAMIL.

Supplies for Roofers and Sheet Metal Workers.

W. J. Burton & Co., who style themselves "the Quick Shippers," and whose plant is located at 160-166 West Larned street, Detroit, Mich., have just issued their new catalogue, M, which covers a wide range of goods in the line of roofers' and sheet metal workers' material and supplies and which, they state, contains several items not previously included in their line. The company claim to have facilities for manufacturing cornices and other goods such as are possessed by few other plants in the country. A feature of their equipment is a machine for crimping galvanized iron and copper, so that they can guarantee their cornices to be especially strong and substantial, and if properly painted, to present a perfect imitation of tooled stone.

The first portion of the catalogue is devoted to galvanized iron cornices in a large number of styles suitable for all classes of buildings. These are followed by sheet metal fire proof fronts, with a number of views demonstrating the handsome and attractive effects that can be produced in this style of construction. Crown and foot moldings, window and door caps and frames are next treated, together with finials, ridging, cresting and vanes, also weather vanes and steeple crosses. A section is occupied by galvanized iron ridging, cresting and finials and hip finials. Stamped and pressed zinc ornaments, urns, balusters and cornice brackets in great variety are next presented. Several pages are devoted to skylights of various patterns, sectional views being given showing the style of construction. Attention is specially called to Burton's removable skylight, which is described and illustrated in detail, and is especially recommended for ventilating hotels, kitchens, restaurants, stores, mills and factories. Automatic fire proof metal windows, made of hollow metal, window frames and sash glazed with wire, plate or stained glass, are also illustrated.

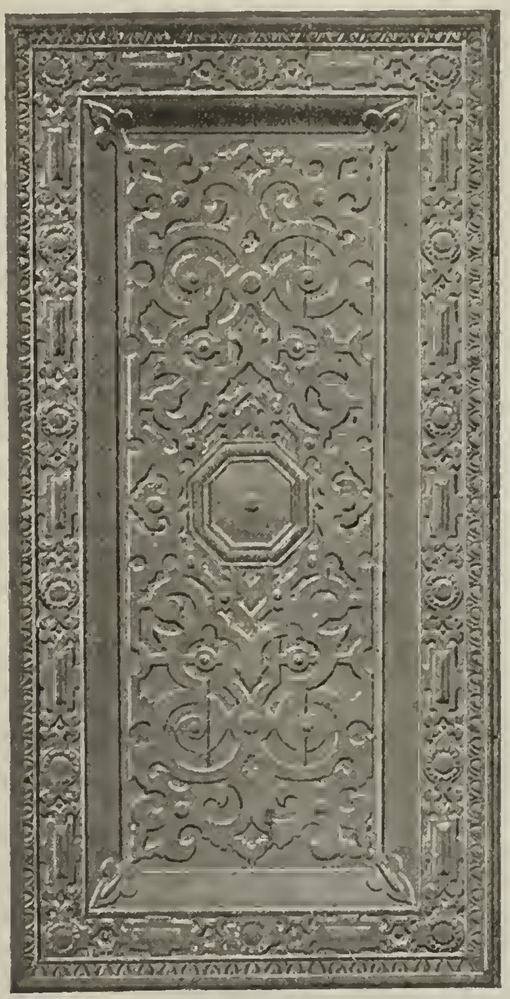
The latter portion of the catalogue is occupied by roofers' supplies, including Burton's fire proof metallic lath, corrugated iron roofing, siding and ceiling, flashing, V crimped roofing and siding, self-capping roll roofing, roof capping, iron siding and ceiling, weather board siding and brick siding, rock face stone siding, cornice and pilasters, metallic shingles and tile, felt and composition roofing, Baroid roofing and Burton's felt and burlap asphalt roofing, which is prepared with a gravel surface. These goods are followed by trimmings for felt and composition roofing, roofing paints, papers and felts, coal tar and pitch, elastic roofing cement and roofing nails.

Among the miscellaneous goods included in the catalogue are rivets and bolts, stove bolts, ladders, adjustable scaffolding jacks, galvanized iron eave trough and miters, eave trough ends and drops, roof gutters and braces, quarter circles, O. G. and box gutters, eave trough hangers, conductor strainers, conductor pipe, elbows and shoes, ornamental conductor heads and bands, malleable conductor hooks, cut offs and valleys. The statement is made that the firm are the largest buyers of tin plate in Michigan and their special brands of roofing plates are claimed to be of superior quality. They also manufacture a line of special brands of solder. Special attention is called to the Dayton sure draft revolving chimney top and the World ventilator, which are specialties of the concern.

The company carry a large stock of black and galvanized sheet iron, crimped sheets, sheet zinc, galvanized iron tanks, stove pipe elbows, nested stove pipe and a line of steel stoves; including the Special, Standard, Maple and Birch, also Burton's hot blast stove for soft or hard coal. Burton's fuel economizer and a variety of tinners' and roofers' tools conclude the list of goods in the catalogue. The last pages are occupied by views of buildings on which the company's roofing and metal work has been used. The catalogue consists of 116 pages, and is well printed and illustrated. An alphabetical index is a convenient feature of the publication.

Artistic Stamped Metal.

We present herewith three examples of the artistic effects produced in stamped sheet metal for interior decoration. The examples given are taken from the new catalogue of the Penn Metal Ceiling & Roofing Company, Limited, Hamilton and Twenty-third streets, Philadelphia, Pa. In Fig. 1 is shown an Elizabethan deep mold plate. These plates are stamped to the depth of 1⅞ inches, and the size of the plate is 24 x 48 inches. When assembled, with suitable finish, this design presents a remarkably handsome and dignified effect. The ornamental side wall panel shown in Fig. 2 is 18 x 24 inches in size, and is suitable for use with or without frames. Fig. 3 represents a zinc mounted ventilating center, 36 x 36 inches. The manufacturers of these goods claim that when properly applied and tinted artistically, they form the handsomest ceilings and side wall decorations that it is possible to secure. A feature that will recommend the use of metal ceilings and side walls is that after the first cost is met no further expenses need be incurred, as the material will last as long as the building.



Artistic Stamped Metal.—Fig. 1.—Elizabethan Deep Mold Plate.

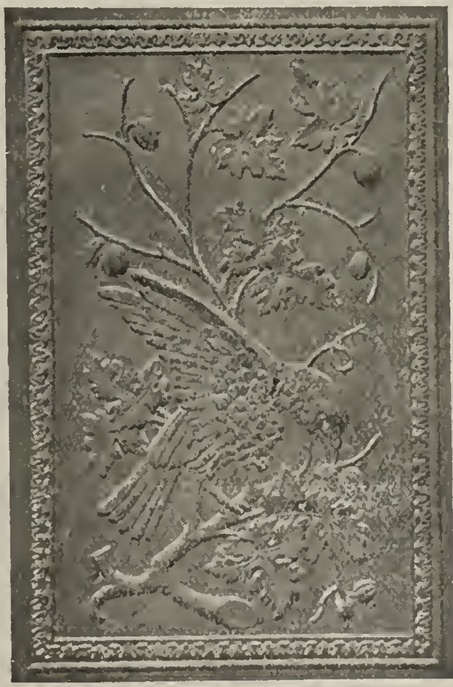


Fig. 2.—Ornamental Side Wall Panel.

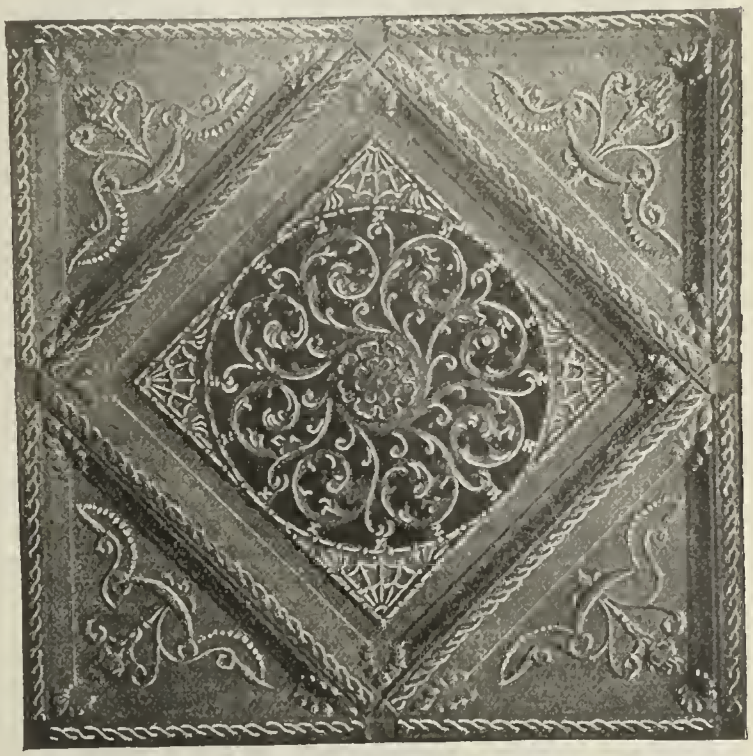


Fig. 3.—Zinc Ventilating Center.

The Vandergrift Works.

On Monday, May 12, there were shipped from the Vandergrift Works of American Sheet Steel Company, at Vandergrift, Pa., 1642 tons of sheets. This is very much the largest day's shipment in the history of this plant, the best previous record for one day being 1012 tons. The Vandergrift Works are being very much enlarged, ground having been broken recently for the building of two more open hearth furnaces, giving a complement of eight. The work of installing eight more sheet mills at this works has almost been completed, which will make a total of 29 mills in the Vandergrift plant. In the Vandergrift-Apollo unit, embracing mills at Vandergrift, Apollo, Hyde Park, Saltsburg and Leechburg, there will be a total of 54 mills. Eugene W. Pargny is district manager of the Vandergrift-Apollo unit and S. A. Davis is division superintendent, with headquarters at Vandergrift.

Clover Leaf Ventilators.

E. Van Noorden Company, 944 Massachusetts avenue, Boston, Mass., are manufacturing Clover Leaf ventilators for use on theaters, churches, halls, factories, dwellings, &c. The ventilator is made of sheet metal, usually galvanized iron, sometimes copper, and consists of a vertical pipe or barrel, surmounted by an overhanging three-gabled roof, with open vertical gables. Opposite each gable is a shield (or Clover Leaf) to deflect the wind. It is explained that when the wind blows horizontally it strikes the shield and draws the internal air out of the barrel by suction, the exit being at the spaces between the gables and shields; also that when the wind is blowing downwardly, it strikes the gabled roofs and is deflected outwardly, making a suction in the barrel and emptying the internal air at the bottom of the shields. The ventilator is referred to as being built with enough spread to insure an exit capacity equal to double the area of the barrel, thus providing for the discharge of all the air in the barrel at once.

W. H. Mullins, Salem, Ohio, has lately booked orders for Sheet Metal Boats for St. Petersburg, Russia; the Soudan, Egypt, and Madras, India.

Removing to Morgantown, W. Va.

Arrangements have just been completed by which the plants of the Steel & Iron Aluminum Coating Company and the Rolling Mill Company of North America will be removed to Morgantown, W. Va. The Steel & Iron Aluminum Coating Company are manufacturers of aluminum coated sheets, which are sold in competition with galvanized. The Rolling Mill Company of North America broke ground at South Connellsville some months ago for the building of a ten-mill sheet and tin plate plant, but the work of construction has not proceeded very far. It is understood that handsome inducements in the shape of free sites and bonuses have been given to these concerns in order to induce them to remove from Connellsville to Morgantown.

FLASHINGS.

The Star Cornice Works, Fort Worth, Texas, have just begun business in the manufacture of Galvanized Iron and Copper Cornices. They are also doing a general tin roofing and jobbing business and conduct a furnace, heating and ventilating department. The firm are composed of A. F. Diefenderfer and J. N. Bressler. Their plant, which is located at Jennings avenue and Texas street, is equipped with the latest machinery for the manufacture of Cornices and for carrying out all kinds of sheet metal work. They state that they are in the market for supplies and furnaces, and would like to receive copies of catalogues from jobbers and dealers in the lines in which they are engaged.

Lamb & Ritchie, Cambridgeport, Mass., issue a 22-page catalogue of interest to tinsmiths and roofers, which is devoted mainly to Galvanized Expanded Conductor Pipe of different styles, with Elbows and Shoes, Conductor Heads and Adjustable Fasteners and Hooks for securing them to buildings, also Plain Round Galvanized Conductor Pipe and Elbows. Ritchie's Patent Spiral Lock Seam Pipe, made of both galvanized iron and tin, is one of the specialties manufactured by the concern, who also make Speaking Tubes and Speaking Tube Fittings. The latter pages of the catalogue are occupied by Eaves Trough Hangers, Miters, Outlets and End Caps, Copper Eaves Trough, Moore's Ventilators for chimney tops and Wire Strainers for conductor heads. A circular inclosed calls attention to the L. & R. Tin Lined and Lead Lined Iron Pipe.

President George G. McMurtry of the American Sheet Steel Company has purchased a $270,000 residence at 812 Fifth avenue, New York.

The Protective Ventilator Company, 129 Fulton street, New York, are sending out a neat circular in the interest of their Protective Ventilators, designed for use in connection with windows. In application the Ventilator is located at the bottom of the window and it is designed to throw the inward currents of fresh air upward so as to obviate the effect of draft. It is provided with a wire screen to serve as a filter. The company state that those who have no brush for cleaning the Ventilators will be furnished with one free of charge on application.

The Buffalo Forge Company, Buffalo, N. Y., are distributing a neat little circular of 14 pages, showing by means of half-tone engravings the various types and styles of their Buffalo Improved Ventilator, designed for use in helping weak drafts in chimneys and, in the larger sizes, for aiding in the withdrawal of foul air, smoke and gases from churches, public buildings and factories. Attention is also called to the Buffalo fan system of heating and ventilating by means of a broken view, showing engines, fan, heater and a section of the duct with mixing chamber.

George Callahan & Co., 218 Front street, New York, advise us that they are in receipt of a large volume of orders from all parts of the country for their Elastic Paint Oil. The company say that the elastic qualities of this Oil and the fact that it does not dry brittle, crack, peel off or blister have attracted to it the favor of roofers wherever used. They started to manufacture this specialty about eight years ago and now they find that the business in this material has so greatly increased that they are obliged to extend their facilities for its manufacture.

Two hundred workmen in the copper mill of the Rome Brass & Copper Company of Rome, N. Y., struck work on Friday last, on the refusal of the company to grant an increase of 15 cents a day to men earning less than $2 a day.

Joseph F. Beck, manufacturer of Galvanized Iron and Copper Cornices, Metal Skylights, &c., has removed his place of business to 425 K street, N. W., Washington, D. C., where he has larger quarters and every facility to do sheet metal work in all its branches.

Tinsmiths and stove dealers, who are called upon to improve weak drafts in chimneys, will be interested in the little pamphlet issued by George E. Fenn, 94 Blackstone street, Boston, Mass., devoted to Fenn's Rotary Ventilators, Chimney Bases and Ventilation Bases for connection with the tops of flues.

Officials of the Lalance & Grosjean Mfg. Company of New York paid a visit to their Tin Plate works at Harrisburg, Pa., this week, and it is reported that a number of improvements are contemplated. An open hearth steel plant has been talked of as one of the new departments.

H. W. Taylor of the firm of N. & G. Taylor Company, Philadelphia, who has been abroad with his family for the last three months, sailed from Liverpool May 10 on the "Campania."

A movement is on foot at Newark, Ohio, looking toward the erection of a large Sheet and Tin Plate plant in that city. It is stated that a syndicate of foreign capitalists, through the efforts of prominent Newark citizens, have secured an option on the Forry farm of over 100 acres, where it is intended to erect the plant.

The Inland Steel Company announce that their new plant at Indiana Harbor, Ind., will be in operation in June with a daily capacity of 500 tons of Open Hearth Steel. Arrangements are being made to roll the lighter sections of Structural Angles, Channels and I-Beams at the new works, in addition to Open Hearth Billets, Slabs, Sheet and Tin Plate Bars, Shafting, Plain and Galvanized Sheets. The company have already booked orders for a liberal tonnage of Billets, Sheets and Heavy Bars for delivery extending into the second half of this year. The increase in the capital stock of the company, recently announced, was made to provide funds for extending the scope of the company's operations.

W. H. Mullins, Salem, Ohio, has issued a very artistic catalogue of Stamped and Embossed Sheet and Metal Goods. It is copiously illustrated with tinted views of tops and sides of Boats, also of Boats in use. The Boats shown include Duck Boats, with or without air chambers, which may be supplied with folding centerboard, rudder, mast and sail; Yacht Tender or Dingey, Double-Ender Tender or Fishing Boat, which may be supplied with rudder, folding centerboard and sail; Indian Canoes and Sectional Canoes. A portion of the catalogue is devoted to what purchasers have to say of these Boats.

Warren B. Thomas and others of Johnstown, Pa., have bought the Tin Plate plant at that place which was dismantled by the American Tin Plate Company, and will remodel it for use in a new line of Iron and Steel manufacture.

Joseph McCreery, 637 Infirmary Road, Toledo, Ohio, is sending to the trade circulars describing the McCreery Pressed Bent Elbows, which are made in all sizes from 3 to 8 inches in diameter, and of No. 27 gauge galvanized iron and lighter. These Elbows are stamped out of black iron in halves, while hot, in polished cast steel pipes, and are neatly double seamed together in the throat and on the back with a fine double seam, making them perfectly smooth inside and out. The double seam running lengthwise of the Elbow adds to its strength.

The Columbia Can Company of 5 North Arlington avenue, East Orange, N. J., have been incorporated, with a capital of $200,000, by Jackson Marsh, Henry Hosier and William C. Cox.

ANNUAL CONVENTION OF THE CONNECTICUT MASTER PLUMBERS' ASSOCIATION.

The twelfth annual convention of the Connecticut Association of Master Plumbers was held in Bridgeport Wednesday, May 14. The meeting was called to order at 10.30 a.m. by President M. W. Manwaring, with a very satisfactory attendance, delegates being present from all parts of the State. Mr. Manwaring expressed his satisfaction at seeing so many representatives of the craft present, and gave them a cordial greeting, concluding by introducing Denis Mulvihill, Mayor of Bridgeport. Mr. Mulvihill, in a few appropriate remarks, welcomed the delegates to the city, and expressed his pleasure at meeting so large a number of the members of one of the most important and necessary trades. James Donovan of Middletown responded for the delegates in his usual pleasing manner, after which the meeting got under way.

Norman S. Gadden of Bridgeport and P. F. Connolly of New Haven were appointed sargeants-at-arms, and the president appointed the following committees:

Credentials: G. S. Bull and T. F. Langdon of Hartford, T. E. Logan and H. B. Middlebrook of Bridgeport, C. S. Belfit of Waterbury.

Membership: Theodore A. Potter and William McDonald of New Haven, G. W. Miner of Waterbury, J. F. Brady of Bridgeport, T. L. Dowling of Hartford.

Auditing: C. U. Neumann of New Haven, J. M. Page of Naugatuck, F. C. Booth of Bridgeport.

Resolutions: L. H. Mills of Bridgeport, E. Mahl of Hartford, T. W. Corbett and S. E. Dibble of New Haven, T. D. Barlow of Waterbury.

The roll call was responded to by a larger number of delegates than had been in attendance at any convention for a number of years. Letters were read from President E. D. Hornbrook of the National Association expressing regret at his inability to be present, explaining in detail the Cleveland Resolutions and giving information concerning the national convention at Atlantic City in June. A letter was also read from Mr. Manwaring, chairman of the Essay Committee, suggesting topics for essays to be presented at the National Association. John Donovan reported for the Legislative Committee, S. E. Dibble for the Sanitary Committee and F. F. Hitchcock for the Essay Committee. Mr. Hitchcock also read a paper reviewing the past year. L. H. Mills reported for the Apprenticeship Committee.

President Manwaring read his report covering the work of the year, showing some additions to the membership of the association, urging personal effort in carrying out the objects of the association and a more comprehensive plan for interesting all master plumbers of the State in the association. He paid a touching tribute to the late James Ahern of Hartford, and spoke enthusiastically of the cordial support of his associate officers.

The report of the Executive Committee was read, giving in detail the work of the board for the year. The report of Financial Secretary G. S. Bull was also read, as was the report of Treasurer John Donovan, showing a balance on hand of $845. E. Mahl reported for the Memorial Committee. He paid a high tribute to the late James Ahern of Hartford, expressing appreciation of his value to the association while living.

F. F. Hitchcock of Woodbury and T. D. Barlow were appointed to prepare a suitable memorial to Mr. Ahern.

The Committee on Resolutions recommended a resolution of sympathy for A. H. McMahon of New Milford, whose place of business was destroyed by fire in the big conflagration in that town. Several important matters concerning the trade were then considered in executive session. The Cleveland Resolutions were unanimously indorsed.

The election of officers for the ensuing year resulted in the unanimous choice of the following:

President, C. E. Coe, New Haven.
First Vice-President, Edward Mahl, Hartford.
Second Vice-President, F. F. Hitchcock, Woodbury.
Financial Secretary, G. S. Bull, Hartford.
Corresponding Secretary, H. B. Bushnell, New Haven.
Treasurer, James Donovan, Middletown.
Delegates to National Convention: M. W. Manwaring and James Donovan.

The thanks of the convention were given to the retiring officers, and Mr. Coe, the newly elected president, in a few remarks, assured the delegates that he would do all in his power to faithfully perform the duties of his office. Adjournment was then taken to the Atlantic Hotel, where about 125 sat down to the annual banquet.

After the business meeting President Coe received the congratulations of the delegates on his election, and also on the arrival of a new plumber in his home in the shape of a bouncing baby boy.

Among the visitors were M. E. Norton of the Plimpton & Hills Corporation, Hartford; R. H. Maguire of F. W. Webb Mfg. Company, Boston; R. B. Hamel of the Alberene Stone Company, New York; Wm. Robinson of John A. Murray Company, New York, and William Wall of the W. H. Page Boiler Company, Norwich, Conn.

THE HEATING ENGINEERS' SUMMER MEETING.

Secretary W. M. Mackay of the American Society of Heating and Ventilating Engineers has issued, under date of May 14, a further notice to the effect that the fifth semiannual meeting of the society will open at Hotel Rudolf, Atlantic City, N. J., on Monday, June 16, and that the meetings will be held at 10 o'clock a.m and 2 and 8 p.m. The Hotel Rudolf has made a special rate of $3 per day and upward, on the American plan, to members and others attending the meeting, with a reduction if two or more persons occupy the same room.

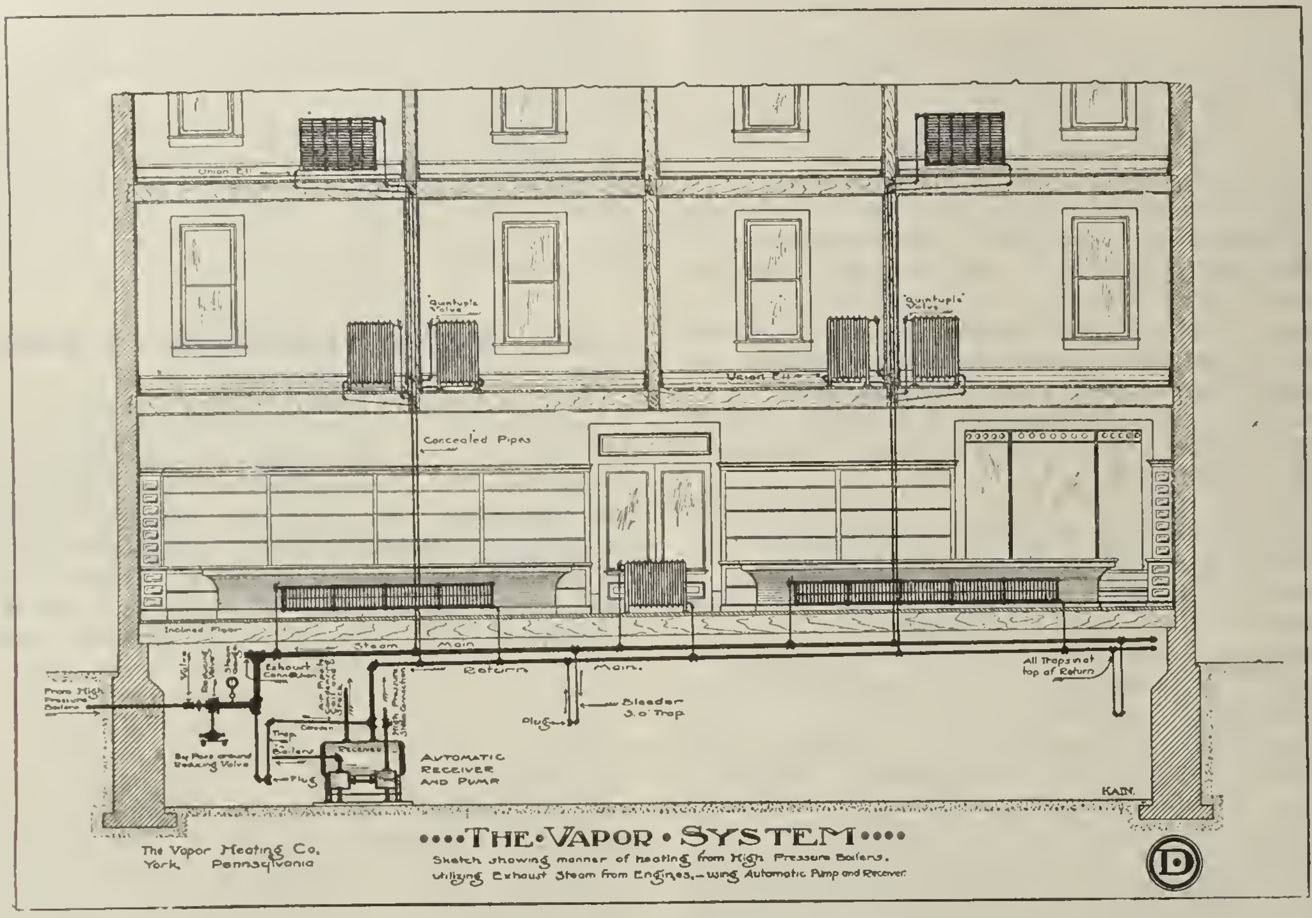
The secretary requests that papers and topics for discussion to be presented at this meeting should be in his hands before the end of May. A large number of members have signified their intention of being present, and there is every indication of a well attended and successful meeting. While the society is not able to guarantee a sufficient number to secure a rebate in the railroad fare, arrangements have been made with the National Association of Master Steam and Hot Water Fitters, who hold their convention at the same place on June 12. 13 and 14, so that any members of the Society of Heating and Ventilating Engineers who wish to avail themselves of their rate of one fare and one-third can do so, provided they reach Atlantic City before the close of the steam fitters' convention on Saturday, June 14, by procuring a certificate to the National Association of Master Steam and Hot Water Fitters' convention when purchasing their tickets.

A Chicago Heating Supply House.

The Chicago Heater & Supply Company, Chicago, Ill., advise us that on account of the increase in their business they are obliged to move into larger quarters at 33 Dearborn street, where they expect to have one of the most attractive and complete showrooms of heating goods in the city. The company have also secured additional storage capacity and will carry a complete line of Richmond round and sectional boilers and tank heaters, made by the Richmond Stove Company of Norwich, Conn., for which concern they are the Chicago representatives. They will also carry a complete line of Utica Imperial round and sectional boilers and Utica heaters made by the Utica Heater Company of Utica, N. Y., which concern they represent in Chicago, together with radiator valves and all steam fitters' supplies. The company expect to make a record for prompt shipment of anything in the heating line. They are also Eastern representatives of the Ohio Brass Company of Mansfield, Ohio, who have recently produced from new patterns a complete line of steam and hot water radiator valves and globe, angle, check and gate valves. These valves are of superior finish and are heavier than any of the regular standard make of valves. The officers of the Chicago Heater Company are: Clarence M. Converse, president; Martin E. Converse of Winchenden, Mass., vice-president, and Thomas B. Emery, secretary and treasurer. They will be glad to send catalogues and prices of any goods in their line to those desiring the same.

BROOMELL'S PATENT VAPOR SYSTEM.

The progressive heating contractor endeavors first to thoroughly master the art of installing heating apparatus successfully, and then devotes his energy to lopping off unnecessary expense attending the work. It has been said that the steam fitting trade throughout the United States have become familiar with all the details of the usual two-pipe system of steam heating, and that those who are progressive are still reaching out for some modification which will preserve the efficiency while reducing the expense of installation and the fuel bill. For the past two years considerable attention has been given to Broomell's patent vapor system and the special apparatus used in connection with it that has been put on the market by the Vapor Heating Company of York, Pa., and 917 Arch street, Philadelphia.


Union Ell
Quintuple Valve
Quintuple Valve
Union Ell
Concealed Pipes
Inclined Floor
Steam Main
Return Main.
From High Pressure Boilers
Valve
Exhaust Connection
Bleeder S. 0. Trap
Plug
All Traps not top of Return
Trap
Boilers
Receiver
Plug
By Pass around Reducing Valve
High Pressure Steam Connection
AUTOMATIC RECEIVER AND PUMP
KAIN.
THE VAPOR SYSTEM
Sketch showing manner of heating from High Pressure Boilers, utilizing Exhaust Steam from Engines,—using Automatic Pump and Receiver.
The Vapor Heating Co. York, Pennsylvania
D

Broomell's Patent Vapor System.—Fig. 1.—Elevation, Showing Piping, Radiators and Apparatus.

All steam fitters are aware that it is necessary for air which occupies the radiators and the steam pipes to be expelled before steam generated in the boiler can circulate through them and successfully effect the heating of a building. If any portion is air locked, failure to heat satisfactorily will be the result, and it not infrequently happens that, through negligence in attention to positive air valves or to imperfections when automatic air valves are used, the radiators do not heat properly. The salient feature of the Broomell vapor system is the exhaustion of this air from the heating system, so that it is not necessary to raise the pressure of steam in the boiler to secure a circulation of vapor and heating.

An elevation of a heating system is shown in Fig. 1, in which the Broomell patent vapor system, equipped with the necessary apparatus, is used. When a fire is started and the draft in the chimney is accelerated, owing to the heat applied, the suction is utilized for drawing the air out of the pipes and radiators of a heating system by means of special appliances. The steam passes from the boiler through the piping system in the usual manner, and, owing to the exhaustion of the air, it is frequently unnecessary to raise more than the vapor that arises from the heated water before it reaches a boiling temperature. The amount of vapor admitted to a radiator for heating a room is regulated by means of the special valve shown in Fig. 2, having ports of different sizes, so that the supply to the radiator and the heating can be regulated to the requirements. After the vapor has passed through the radiator, either in the form of condensed water or water with which more or less vapor may be carried, it passes to the combined receiver shown in Fig. 3, all of the condensed water returning from the heating system passing through the receiver, which is a cast iron cylinder with a glass gauge graduated on the inside and an open top having a hinged lid. A copper float is connected by means of a brass chain with a hinged lid and also with the damper of the boiler. The receiver also has a special safety valve.

In operation, all the return pipes from the building are connected with the receiver, and when there is no pressure in the boiler the water in the receiver will stand at the same level as the water in the boiler. When any pressure is produced in the boiler the water will accumulate in the receiver until it overcomes the pressure, when it will flow into the boiler by gravity. The dampers of the boilers are controlled by the rise and fall of the float with the hight of the condensed water in the receiver. By this means, when the dampers permit the fire to burn briskly and generate pressure, the accumula-

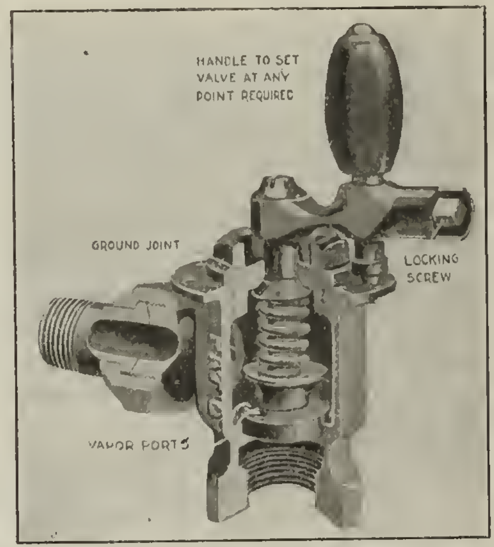


Fig. 2.—The Special Valve.

tion of water will so operate the dampers that the draft will be reduced, and with it the pressure. As the water returning from the radiator passes into the receiver, the air will pass out through the condensing coil shown in Fig. 1, and any vapor it may contain will be condensed in this coil, which is usually placed under a register in the floor so that the heat generated may be utilized. Through the condensing coil the receiver is connected with the chimney by means of a pipe, so that the whole heating system is open to the atmosphere, and it is practically always free from pressure, but subject to a suction equal to the draft of the chimney.

The simplicity of this method of removing the air from radiators makes it readily understood and enables the system to be successfully installed by all steam fitters. It is pointed out that with this system smaller sizes of pipe may be used for heating a building than would be required with the ordinary two-pipe system. This enables the heating contractor to install heating plants in buildings with the ordinary tools with which his shop is equipped. Owing to the radiators being evenly heated throughout their entire surface and without the boilers being so fired as to raise the pressure, it is claimed that a more satisfactory heating is effected with a substantial economy in the consumption of fuel. The company have published a catalogue giving a detailed explanation of this system, and they invite investigation of it. They are prepared to render such assistance as may be needed by those who desire to profit by the installation of their vapor system in their vicinity.

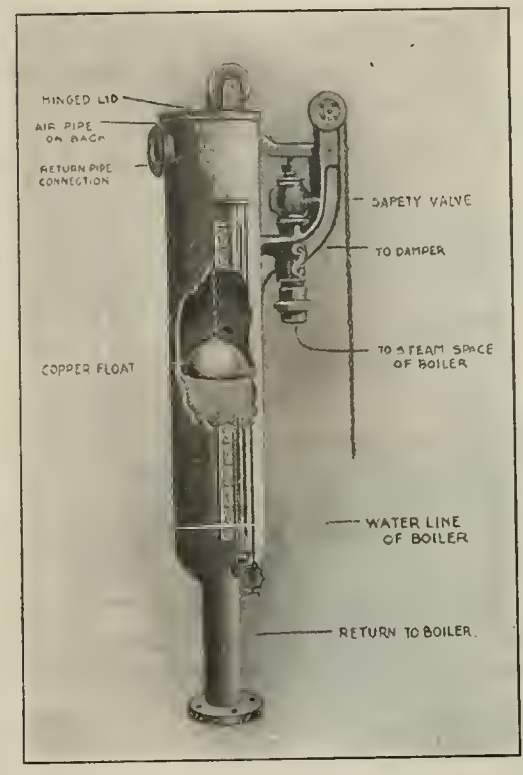


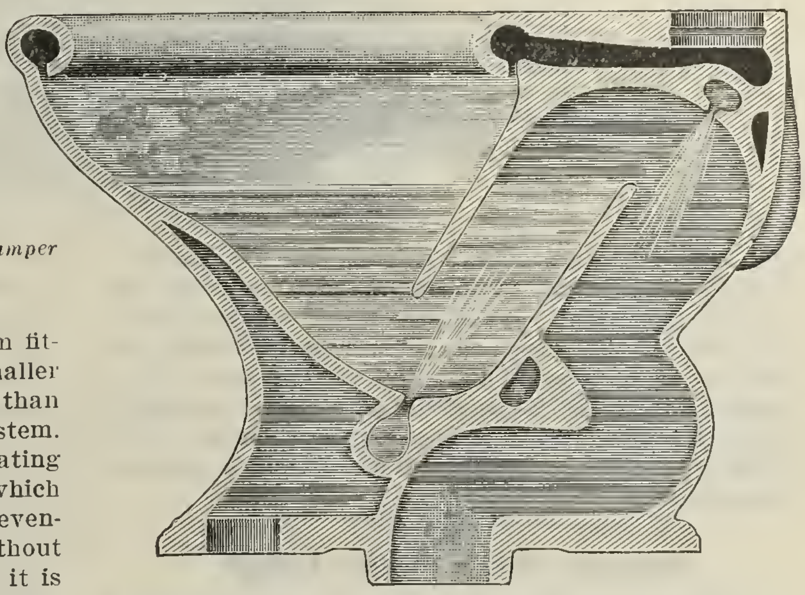
Fig. 3.—The Combined Receiver, Relief Apparatus and Damper Regulator.

Town Lighting with Acetylene.

An opportunity for opening up a profitable line of business is presented to enterprising tradesmen in small towns throughout the country in the acetylene lighting field. The excellence of the light afforded by acetylene gas and the ease with which a complete street lighting system may be installed should make this branch of work highly popular as well as remunerative to those who take it up. The Abner Acetylene Gas Company, 32 La Salle street, Chicago, who make a specialty of the Abner acetylene gas generators, purifiers and appliances, have recently issued a pamphlet of 20 pages devoted to this branch of their business. A feature of the book is a folding sheet, 9 x 26 inches in size, showing in plan and elevation a complete acetylene gas generating plant suited to a small town. The different parts are numbered and the text gives a complete explanation of the apparatus, with directions for installing it. Useful information as to the cost of installing and operating such a plant is also given, together with additional illustrations designed to make the explanation of such systems more clear. The book also explains the apparatus and installation of plants adapted for lighting several residences grouped together in a suburban section. Investigation of the apparatus by those who have the facilities for taking up its sale is invited by the manufacturers.

A Low Down Siphon Jet Closet.

Since the advent of the low down flush tank for water closets, this type of fixture has acquired a wide popularity, and special attention has been given to the construction of closets adapted for use with this device. The Great Western Pottery Company, Kokomo, Ind., make a variety of closets designed for use with low pressure flush tanks. In the accompanying illustration is presented a sectional view of their low down siphon jet closet. This closet is of special construction, having two distinct jets, one opening into the trap at the lowest point and throwing the water resting in the bowl and outlet, forming a seal, up and over into the back leg of the closet, at which point it is met by a downward jet, thus producting a rapid, strong and effective siphonage. This arrangement of jets is looked upon by the company as the best, although they also make the closet with two jets leading to the lower jet opening, where such is preferred. Closets constructed as shown, with the slight pressure afforded by low down flushing tanks, insure a prompt siphonage and scouring of the closet bowl through the use of the two jets, which fill the back leg of the closet with water to the practical exclusion of air. This produces as effective a siphonage as can be desired.



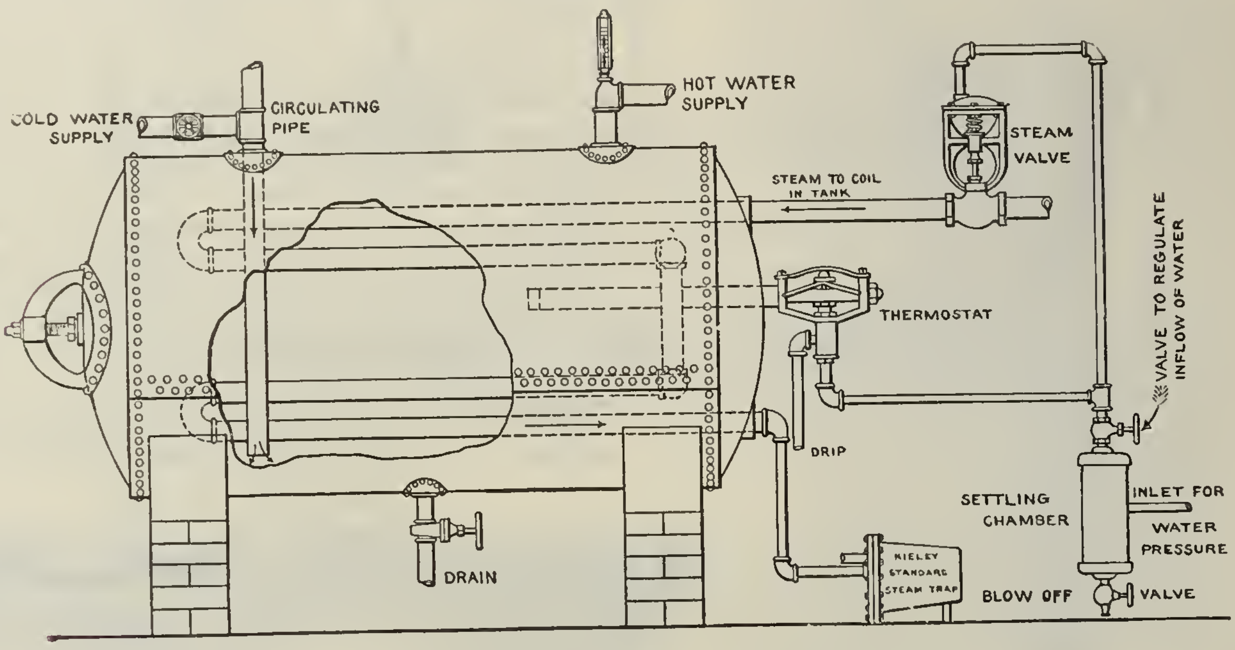
A Low Down Siphon Jet Closet.

In addition to this closet the company make an extensive variety of siphon jet wash down and wash out, plain and embossed. The closets are all made of a high grade of vitreous china and are stamped with the trademark of the company, so that those who buy can be sure of the character and quality of the goods they receive. The company's catalogue, recently issued, not only gives cuts and descriptions of the goods and the various fixtures used in connection with them, including vitreous china flushing tanks, but also contains plan views giving all the dimensions that may be needed by a plumber for roughing in the pipes to suit the goods to be connected with them when the building is ready for occupation.

The Thomas Iron Company, Waukegan, Ill., issue a 48-page catalogue devoted to the extensive line of Radiator Valves for steam and hot water heating, also Gate Valves and Stop Cocks, Check Valves, Meter Cocks, Safety Valves and Pressure Reducing Valves, used by the heating contractor in his work. Water Gauges are also shown in the catalogue.

The Thermo Hot Water Temperature Controller.

A substantial saving of steam, consequently of power and expense, has been effected wherever care has been taken to shut off the steam supply when the temperature of the water furnished in apartment houses, hotels and institutions has reached a satisfactory temperature. Where this has been left to the engineer or caretaker the water often becomes overheated and the steam wasted through want of attention at the proper time. This has led to the production of various thermostatic devices for shutting off the steam supply when the water is sufficiently heated. In the accompanying illustration is shown one of the many ways of applying the thermo hot water temperature controller made by Kieley & Mueller, 7 to 17 West Thirteenth street, New York City. The thermostat extends into the boiler, so that the temperature of the water in it directly influences its operation. When the water reaches the desired temperature expansion affects the controlling features of the thermostat and shuts off the steam valves supplying steam to the water heating coil. The simplicity of its construction and operation enables the device to be readily attached by the plumber and to continue durable in use.



The Thermo Hot Water Temperature Controller.

American House Heater Gauge.

To meet the requirements of the manufacturers of steam and hot water boilers and of heating contractors, the American Steam Gauge & Valve Mfg. Company, Boston, Mass., have brought out a special house heater gauge, as shown in the accompanying illustration. These gauges have been adopted by several of the large manufacturers of house heating boilers. They are of the Bourdon single spring type and are so constructed as to prevent corrosion of the moving parts. Consequently, they are well adapted for use in cellars and basements, where the heating apparatus is usually placed. The figures marked on the dial are large and plain, making the gauge easy to be read under the conditions in which it is usually found. The company state that a siphon should be used in the connection of these gauges.

The American House Heater Gauge.

THE WRECK OF A COPPER BOILER.

BY BEANTOWN.

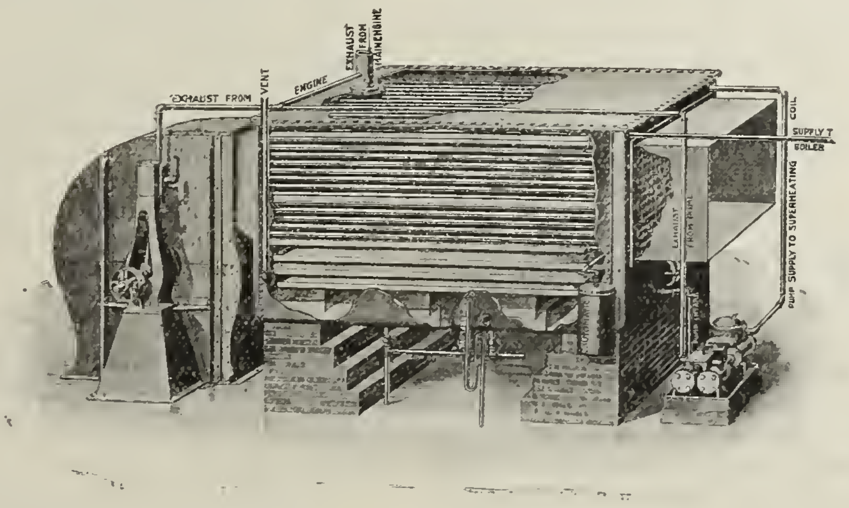
The wreck of a copper boiler recently occurred in New England under circumstances that on consideration somewhat lessen the surprise at the event. The boiler was of the seamless variety, joined in the center with a band over the point of connection and soldered. It was operated under a pressure of 125 pounds. No water had been drawn for some time and the water back was subjected to a heavy firing. When the wreck came, the upper section of the boiler parted from the lower section and struck the floor beams, assuming somewhat the shape of a dish pan. The downward force was sufficient to break the circular rim of the boiler stand and push the bottom down over the two upright cast iron supports. The floor above the boiler was raised about four inches and a pail that was on the floor was thrown forcibly up against the ceiling. The door of the apartment in which the boiler was placed was wrenched from its hinges and driven bodily through another door several feet distant.

The damage is of less interest, however, than the search for the cause of the wreck. In my opinion, with the boiler working under such a heavy pressure and being so strongly fired, the water in it was raised to such a temperature that the strength of the solder joining the two parts was reduced until it would not stand the pressure, and the parts were driven asunder. Naturally, as soon as the boiler sections separated, the water it contained changed at once to steam and gave all the appearance of the boiler having been filled with steam previous to the wreck. But, in my opinion, the water was at as high a temperature in confinement as the steam when it was liberated, and this led to the weakening of the soldered joint and permitted the separation. According to a table before me, water at a pressure of 125 pounds would be heated to a temperature of nearly 350 degrees, and in all probability it reached in this case a higher temperature before the break.

John Stuckenburg, St. Louis, Mo., has purchased property which he will remodel to make it a first-class plumbing establishment.

The Keller Feed Water and Air Heater.

In the accompanying illustration is presented the Keller feed water heater, purifier, condenser and hot air blast apparatus combined, which is being put on the market by the National Steam Economizer Company of Springfield, Mass. It is designed to utilize the exhaust steam from power plants for heating the feed water to boilers, for extracting the grease from exhaust steam condensation, and for heating the building in which it may be installed, by means of the hot blast system. As will be seen from the cut, the apparatus consists of a steel chamber through which a series of tubes pass for the double purpose of condensing the steam and heating the air, the claim being made that air delivered from the heater has a temperature of about 160 degrees. After the exhaust steam passes over these pipes and a spray of feed water has been thrown into it to effect the condensation of the steam it reaches the settling chamber. When the condensation reaches the settling chamber, instead of boiling, it is quiet and allows any sediment to settle to the bottom. In passing to the settling chamber the exhaust steam passes over baffle plates for the purpose of allowing the grease and oil to become deposited where it can readily be drawn off, and preventing the return to the boiler to form scale. From this lower chamber the condensation is pumped through the superheating coils surrounded by exhaust steam into the upper part of the heater, and is sent to the boiler at a boiling temperature to aid in the quick generation of steam.



The Keller Feed Water and Air Heater.

The heater is made both with a hot air attachment, as shown, and without it. When used in connection with a fan the hot air can be used for heating a building, for drying paper, lumber or other materials, for preventing the freezing of the ore and material going through rock breaking and ore crushing machinery, and to prevent the dirt from adhering and freezing fast to them. A portion of the hot air may also be used directly under the grates of the boilers for promoting a more perfect combustion. The company issue a catalogue fully illustrating and describing the apparatus and the various uses to which it can be put, with instructions for its installation.

The Saturday Half Holiday in the New York Supply Trade.

For several years past the tendency of the firms in the plumbing supply and steam heating supply trade in New York City has been toward closing down for a half holiday on Saturdays during the summer months. At first this took the form of closing by certain concerns during two or three months of the hottest part of the summer, but within recent years the custom has spread to such a great extent that it may now be considered general. Through the efforts of four or five men connected with the supply trade the closing down on Saturdays this year was started much earlier than in previous years and as a consequence all of the houses in the supply trade have been closed since the first Saturday in May. This is to continue until the last Saturday in September. The jobbing trade have issued notices to their customers that their stores in the metropolitan district will be closed at 1 p.m. on Saturdays during the summer months, commencing with Saturday, May 3. In order to facilitate matters, they have asked out of town customers to arrange that all their communications shall reach the jobbers as early on Saturdays as possible, in order that they may receive prompt attention.

New York City Notes.

Frederick Schlüchtner, former president and an active member of the Brooklyn Master Plumbers' Association, died suddenly last Wednesday morning. Under the firm name of Schlüchtner Brothers, he and his brother conducted a large hardware, roofing and plumbing business, at Atlantic and New Jersey avenues, in the East New York section of Brooklyn. The business was established many years ago by his father. The funeral, which took place on Friday, was largely attended by members of the Brooklyn branch.

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Many plumbers are getting ready for a good season's work. Among the jobs reported since last week are those of J. J. McGrath, who has a loft and business building on Broadway, north of Nineteenth street; and Charles Hensle, with a row, 100 x 86 feet, at 140th street and Eighth avenue, and a large apartment on Forty-seventh street. W. G. Jack & Co. have two tenements at 94 and 96 Lawrence street.

⁂

The plumbers in Manhattan begin to feel easier, now that they about know how to figure wages, as it has been practically settled that the prevailing rate of wages will be $4.25 a day from June 15, with a half holiday on Saturday. This will be all right on new work, but many plumbers doing a jobbing business have had hard work to keep up when the rate was $3.75.

⁂

There are many private houses or mansions going up in the Murray Hill section of the city on the West Side, and east of Central Park. James Muir is plumbing one five-story building, 50 x 85 feet, at 3 East Seventy-fifth street; James Armstrong has one at 11 and 13 West Fifty-third street; Griffin & Seddon have one of 50 feet front on Fifty-first street near Madison avenue, and W. H. Quick has another of 34 foot front at 165 and 167 East Seventieth street; J. F. Boyle is doing the plumbing in a row of 16 houses on Seventy-fourth street west of Central Park West, while H. P. Mills & Bro. are practically replumbing the house at 124 West Seventy-second street, and James Armstrong is plumbing the telephone building at 126 to 130 Orchard street.

⁂

Among the large jobs downtown are those at the Hanover Bank, which is being done by J. N. Knight & Son, and the building at 72 and 74 Broadway, which is being built by Fuller Construction Company and the plumbing of which is being done by W. G. Cornell.

New German Acetylene Generator.

In answer to inquiries from the United States, Consul-General O. J. D. Hughes of Coburg reports that Erik Cornelius, chemist at the carbide factory at Trollhattan, has invented a new acetylene generator. This generator, says the Consul-General, is described as being much simpler in construction than any yet placed upon the market, and occupies but little space. In its operation, the falling of the carbide into the water is automatically regulated by a hollow rubber ball, which, as soon as it is filled with gas, closes the valve between the carbide and the water. When the volume of gas decreases, the rubber ball contracts and the feed valve again permits the carbide to drop. The gas is stored partly in the rubber ball and partly in the space between the funnel-shaped carbide magazine and the water. If more than the normal amount of gas is generated, it secures more room by forcing the water through valves into the water jacket in the sides of the apparatus. A separate gas tank is therefore not needed. Should too much gas be produced, both the water and the gas escape through a safety valve. Common carbide is used; no cartridges. The gas is dried by being allowed to pass through the carbide magazine, where the carbide absorbs the moisture. As there is no gas tank, and as the quantity of gas thus stored is insignificant, it is considered that the fire insurance companies will, without raising the premiums, approve of the apparatus, even when it is placed in dwelling houses.

Heating and Plumbing Notes.

It is reported that President Trainor of the Maryland State Board of Plumbing Examiners stated a short time since that there were in Baltimore 500 plumbers working without licenses, and that the Police Department had been authorized to apprehend those violating the law. In future no plumbing permit will be granted in Baltimore unless the applicant presents evidence that he is a licensed plumber.

The Board of Examining Plumbers of Rensselaer, N. Y., held their regular meeting on Monday, April 28. Two applicants for a plumbing license were examined, one of whom secured a percentage of 82 and was awarded a license. The other made a percentage of 24 and his application was refused.

The Hubbard Furnace & Steam Heater Company, 420 North Calvert street, Baltimore, Md., issue an attractive little pamphlet showing a variety of Steam and Hot Water Furnaces, as well as single and double length Ranges for kitchen use.

The Master Plumbers' Association of Plainfield, N. J., has petitioned the local Board of Health to make provision for the issue of licenses under the new sanitary code to plumbers doing work in that city.

Plumbers will be interested in the catalogue of the Cleveland Faucet Company, Cleveland, Ohio, which is devoted to Brass Work and a variety of Fittings used for the fitting up of restaurants and bars, including Beer Pumps, Air Compressors and also a complete line of fixtures for soda water fountains. A large portion of the catalogue is devoted to Iron Boxes and Cabinets for keeping beer, ale and other liquids cooled.

The Buffalo Forge Company, Buffalo, N. Y., report the usual brisk demand for the goods which they manufacture. Among important contracts recently awarded to them is the equipment of the Pennsylvania Steel Company's forge shop with 20 Buffalo Down Draft Forges, by means of which all smoke and gases are completely exhausted. Three large Buffalo fan system heating plants for heating and ventilating the wood working mill, passenger coach paint shop and freight car repair shop on the Lake Shore & Michigan Southern Railroad, at Collingwood, are also in hand, and the Bowery Bay Building & Impovement Company, New York City, are being furnished with a 200 horse-power horizontal center crank engine for an electric lighting plant. The latter company bought the Buffalo Forge Company's engine which was awarded the gold medal at the Omaha Exposition in 1898. The order just entered calls for the same type of engine of larger horse-power.

The American Warming & Ventilating Company, Elmira, N. Y., have sent us a copy of their catalogue A, devoted to Sanitary Appliances. The catalogue consists of 20 pages and shows Ventilating and Water Flushing Latrines for urinals, especially adapted for use in schools and public buildings. Plate pages show broken views of a range of Closets having an automatic dumping tank at one end, which thoroughly scours and flushes the Latrines periodically, and which is connected with the vent flue at the back. This, in turn, connects with a large ventilating flue in which one of the company's Stack Heaters is designed to be placed, to create a continuous up draft. These fixtures are so constructed that they can be extended in length to meet the requirements of the buildings in which they are placed. The text gives such explanation as is needed to make the construction and operation of the fixtures, shown very clearly by the engravings, more readily understood. Tables give the prices. Those who are called upon to do this class of work will be interested in the fixtures shown in the catalogue.

R. W. Reid, manufacturer of Plumbers' Brass Goods and Supplies, sustained a loss by fire in his factory in Brooklyn, N. Y., last Saturday.

John M. Taylor, general manager of the Dominion Radiator Company of Toronto, Canada, and his brother, Adam Taylor, assistant manager of the company, have resigned to enter into the foundry business at Guelph, Ont. Both have been with the Dominion Company since its inception in 1887.

Plumbers who are called upon to connect plumbing fixtures and nickel plated pipes and fittings will be interested in the circular of the Parmelee Girdle Pipe Wrenches, which are designed for screwing up highly polished nickel plated pipes without marring their surface.

A fire, doing damage to the extent of $1000, recently occurred at the establishment of the Gainesville Plumbing Company, Terrell, Texas.

C. W. Fowler has been appointed Plumbing Inspector of Des Moines, Iowa.

We have received from President E. D. Hornbrook of the National Association of Master Plumbers a copy of the issue of May 1 of the "Directory of Recognized Master Plumbers," which shows an increase in numbers.

The strike of the Plumbers', Steam and Gas Fiteers' Union, at Louisville, Ky., has been settled by compromise, the employers agreeing to pay a wage of $3.50 for a day of nine hours.

Thomas Kelly & Brothers, Chicago, Ill., distribute some interesting literature relating to their Automatic Operating Water Closets, Self Closing Cocks, Water Cushions, and a variety of specialties adapted for plumbers' use.

Edward D. Preston, Inspector of Buildings in the Department of Public Safety, Baltimore, Md., will receive bids until May 21 for a heating and ventilating system to be installed in the school building at Lakewood avenue and Orleans street.

A piece of trade literature very attractively prepared and illustrated is issued by the Humphrey Mfg. & Plating Company of Kalamazoo, Mich., in the interests of the Crescent Instantaneous Water Heater, adapted for use in residences, barber shops and restaurants, or any place where a supply of hot water is needed quickly. With the catalogue come circulars giving prices and also showing Stands for supporting the Heaters.

Louis P. Bitz, Rye, N. Y., has removed his plumbing shop from the Daly Building to Justice Baruch's building on Purchase street, which has recently been remodeled.

The catalogue issued by the C. M. Kemp Mfg. Company, Baltimore, Md., contains many specialties that can be used with profit by the plumber, including Cellar Drainers, Soil Pipe Test Plugs, the Climax Wrench and Die Stock, Pipe Wrenches, Pipe Vises, Fire Pots for tinners, and the Climax Gas Machine, designed to manufacture illuminating gas from gasoline for lighting country residences.

David Price, Quartermaster, Fort Getty, S. C., will receive sealed proposals in triplicate until June 4 for heating one double barracks, one single barracks, one commanding officer's quarters, five captains' quarters and three liutenants' quarters by the hot air system; also for heating the hospital by the hot water system. All the buildings are located at Fort Getty.

Red Jacket Mfg. Company, Davenport, Iowa, are distributing their catalogue No. 30 of 216 pages, which illustrates with list prices the company's Red Jacket Hand and Power Pumps, Tubular Well Valves, Cylinders and Rod Couplings, Well Supplies, Galvanized Pipe, &c.

The American Steam Gauge & Valve Mfg. Company of Boston, Mass., with branch offices in New York and Chicago, make an extensive line of Valves adapted to the use of the heating contractor, and also a variety of Gauges for recording steam and air pressure.

J. P. B. Sadtler, 231 Park avenue, Baltimore, Md., is sending to the trade a circular showing the Heller Heater using gas for fuel and designed to be used in connection with an ordinary kitchen boiler, without interfering with the water tank connections. The Heater is so made that it slips around the bottom connection and can be removed when not in use.

The Harrisburg Pipe & Pipe Bending Company, Harrisburg, Pa., are about to erect a $30,000 addition to their plant, including two new buildings of steel construction.

Manufacturers and plumbers who are called upon to devise Ball Cocks to operate under high pressure will be interested in the price-list issued by the Hercules Float Works, Springfield, Mass., who make Seamless Copper Floats, both round and oblong in shape, and also Air Chambers guaranteed to work under a pressure of 150 pounds.

The New York Blower Company of Bucyrus, Ohio, are building four 15-foot Mechanical Draft Fans for the new power plant of the Third Avenue Elevated, New York. They are also building eight 9-foot Fans for Government installations.

Further additions are shortly to be made to the plant of the Sanitary Supply Company, at New Castle Junction, Pa., consisting of two new kilns for burning the clay, and the construction of new stock and storage rooms.

George H. Porter, Jackson, Mich., has secured the contract for plumbing and heating the Otsego Hotel in that city.

A fire visited the plumbing shop of W. C. Mayhew, at 36 North Connecticut avenue, Atlantic City, N. J., on Saturday last. The loss sustained by Mr. Mayhew is said to be covered by insurance.

The Philadelphia Master Plumbers' Association has elected the following delegates to the National convention at Atlantic City, N. J., June 17 to 19: H. L. Righter, H. Smith, C. S. Warfield, J. McNally, E. Mackay, C. Groeling, S. W. Barnes, J. Gormley, W. Jones, W. McCoach, R. J. Hoben, S. Louis Barnes, W. S. Clark, L. J. Sommers, A. M. Hicks, G. Krouse, D. R. Burns, W. H. Doyle, William Harkness, D. D. Whealin, J. Harnett, H. Boon, R. H. Watson, F. P. Brown, H. Neilson, J. Dwyer, J. E. Eyanson, I. T. Hirst and D. Kennedy.

The announcement is made that the National Tube Company have decided that with the building of new tube mills by the United States Steel Corporation, probably at Neville Island and Lorain, Ohio, the company's Tube plant, at McKeesport, Pa., may be abandoned. The company had options on 25 acres of ground, on which they at one time proposed to build extensions, but it is said that the options have been returned and the project either postponed or relinquished.

Quartermaster Thomas H. Slavens, Fort Adams, R. I., will receive bids until June 4 for plumbing, heating and wiring a brick bath house at Fort Adams.

John F. Johnston, Fall River, Mass., has been awarded by the Board of Trustees of the Textile School, that city, the contract for heating and ventilating the school building, at his bid of $3837.

The directors of the City Hospital and Dispensary at York, Pa., have awarded the contract for heating and ventilating the new hospital annex to the Broomell, Schmidt & Steacy Company of that city.

Bids will be received until May 21 by the Board of Awards, Baltimore, Md., for a heating and ventilating system for a school building at Lakewood avenue and Orient street, that city.

Sealed proposals will be received at the office of the Supervising Architect, Washington, D. C., until June 2, for the construction, including the plumbing and heating apparatus, electric wiring and conduits, of the Hygienic Laboratory of the United States Marine Hospital, at Washington, D. C.

T. D. Dempsey & Co., plumbing contractors, of Dubuque, Iowa, have removed their business into larger and more commodious quarters at Eighth and Locust streets, that city.

P. J. Moran of Salt Lake City, Utah, has been awarded the contract for the plumbing in the Emery apartment house in that city at his bid of $8000. Mr. Moran also secured the steam heating contract for the same building at $5492.

The New York office of the Kelsey Heating Company of Syracuse, N. Y., which has been for the past five years at 239 Water street, was moved on May 1 to more commodious quarters at 156 Fifth avenue. The change to this more central and accessible location was made for the benefit of those dealers who might want to send their customers to the office of the Kelsey Heating Company for inspection of their goods. L. V. Sanford, the New York manager, reports that he has never known a spring when he has been so busy, and that as the Kelsey Generator becomes better known, the demand increases at a very rapid rate.

Wilfred E. Mansur, Bangor, Maine, will receive sealed proposals until May 29 for plumbing the Penobscot County Court House.

Proposals for plumbing and heating a new school building at Conway, Mass., will be received until May 24 by A. O. Delabarre, Conway, Mass.

James Bannon, Providence, R. I., has been awarded the contract for plumbing and heating a new grammar school building at Warren, R. I.

A fire visited the plant of W. A. Chase & Co., Buffalo, N. Y., on Thursday, doing damage to the extent of $130,000, which is said to be covered by insurance. The company make and handle Engineers' and Plumbers' Supplies.

The City Council of Bucyrus, Ohio, have granted a franchise to J. W. and E. F. Gwynn for a hot water heating plant to be installed in that city. The plant will be run in connection with the local gas and electric light company. The price to the consumer is fixed at not over 20 cents per foot of radiation per year.

The Kewanee Boiler Company, Kewanee, Ill., announce that they have recently made some important improvements in their Tabasco Hot Water Heaters, and to meet the increasing demands of plumbers in the United States and Canada they have just put on the market an extra heavy Tabasco Heater. It is made of heavy plate, and the company guarantee every Heater tested to 150 pounds pressure before leaving the factory, safe for a working pressure of 100 pounds. The extra heavy Heaters are made in two sizes—viz., 200 and 300 gallon capacity per hour. A large stock of the extra heavy Heaters is carried and the immense stock of the Regular Tabasco Heaters and Storage Tanks in all sizes is still unbroken. A new and complete circular describing this line is now in the press, and the company will be glad to mail one, when ready, upon application. Something else new, of interest to the heating trade, is also in the printer's hands and announcement will be made in these columns subsequently.

The Advance Packing & Supply Company, manufacturers of Engineers' and Mill Supplies, Steam Pumps, Packings and Brass and Iron Goods, 55 South Canal street, Chicago, Ill., advise us that they have a continually increasing demand for their products, which has obliged them to make constant additions to their working force.

New Firms and Changes.

The Steamfitters' Supply Company, Chicago, Ill., were recently incorporated with a capital stock of $15,000, for the manufacture of Plumbers' Supplies. The incorporators are Bertrand Hayes, Richard Hayes and H. I. Shaw.

The Higham, Burton & Taylor Plumbing Company have been incorporated at Salt Lake City, Utah, with a capital stock of $10,000, divided into shares of the par value of $1 each. The officers of the company are John S. Higham, president; Elbert T. Burton, vice-president, and William S. Hughes, secretary and treasurer.

T. K. Conway has opened a plumbing shop at 93 Franklin avenue, Hartford, Conn.

The Central Heating Company of St. Paul, Minn., have been organized with a capital stock of $50,000. The incorporators of the company are J. P. Adamson, R. G. O'Malley and O. H. West.

The American Pipe & Foundry Company of Bessemer, Ala., have been incorporated with a capital stock of $100,000, by W. J. Long, T. Y. Hoffman and H. C. Mead. The company propose to make and sell Iron Pipe, Hydrants, Valves and other foundry work.

Charles Mayhew, who for nearly 50 years has conducted a plumbing, tinsmithing and house furnishing goods business at Edgartown, Mass., has sold his business to Thomas H. Chirgwin. Mr. Chirgwin has been engaged for some years past in the same line of business at Cottage City, Mass., and is well equipped to carry on the trade built up by his predecessor. It is understood that he will also continue his Cottage City shop.

The Pittsburgh Valve & Fitting Company of Pittsburgh, Pa., are being organized by M. J. Alexander and W. D. Hautupee of the Pittsburgh Plate Glass Company and others. A charter will shortly be applied for and ground has been secured for a manufacturing plant in Barberton, Ohio.

James Gray, Rensselaer, N. Y., advises us that he has disposed of his plumbing business to Fowler & Babcock, two young business men of that city. The new firm will be pleased to receive catalogues and price-lists from jobbers and manufacturers in their line.

Frank A. Heinlein has opened a plumbing establishment at 324 Washington street, Brighton, Mass.

The Standard Mfg. Company, Galesburg, Mich., manufacturers of Wind Mills, have been incorporated under the same name, with a capital stock of $200,000, for the purpose of extending their business.

Pleuger & Henger Mfg. Company, St. Louis, Mo., have added to their line California and Chicago patterns of hose valves, Siamese hose connections and compression sill cocks, which they are now making and are prepared to supply to the trade.

E. A. Allen, formerly of Old Town, Maine, has opened a plumbing shop at Millinocket, Maine.

Kneisser & Co., 916 Summit street, Toledo, Ohio, have recently put on the market a Cement for thoroughly sticking together greasy or dirty belts. No pegs, rivets or sewing is necessary, it is explained, when using the cement. It is prepared in a dry form for marketing, put up in 1, 2, 3 and 5 pound packages, and is also sold in bulk. It is alluded to as standing any climate, and as not being affected by heat, cold or dampness. The Cement has been used on belts from 2 inches up to 87 inches in width.

Church Ventilation.

Those who are called upon to heat and ventilate churches will be interested in the experience of St. John's Protestant Episcopal Church, Jersey City, N. J. The matter of church ventilation is not always so simple a problem as to make the solution easy. That it receives more attention than the congregation are oftentimes aware of can be learned by reading the following letter prepared by Rev. Dr. Stoddard, the rector of St. John's:

> St. John's is "not well constructed for good ventilation without a draft." When the people are once seated, it has been found impossible, except in mild weather, to have any windows open without an immediate complaint from the congregation. In former days when this was tried, 20 people have stayed after service to protest against it, and so they did a few Sundays ago when the rear doors were left open a little while. Years ago, therefore, the idea of opening windows above the heads of the congregation was given up and orders were made strict that, save in mild weather, this should not be done.
>
> But is the ventilation bad? We think, on the whole, not. Every Sunday without exception the rector is in the church at from 10 to 10.15 to personally look after this matter. The church is entirely thrown open until the people begin to assemble, so that by that time the whole air is perfectly fresh. The thermometer, by the time the people arrive, is never allowed to be over 62, and during the service is never allowed to rise above 65 degrees.
>
> With the air perfectly fresh at the beginning of the service, with a regulated thermometer, with a church as high as St. John's, 50 feet from floor to roof peak, and with a service only 1 hour and 15 minutes long, there should be very little inconvenience from foul air. The fact that many of the children go out before the sermon, opens the doors midway in the service, makes a current and brings relief.
>
> My answer to any complaints on the score of insufficient ventilation is that windows cannot be open in cold weather when the congregation is in the church: that there is the greatest care taken personally to have the church full of pure air when the people meet, to keep the thermometer down and to make the service short; also that there is almost no complaint about the air, and that as soon as it can be afforded the rector will advocate the adoption of some of the improved systems of ventilation, which, nevertheless, from his experience, is really not very much needed and perhaps never will be until the sermons are an hour long.

Facts About Lightning.

Many people admit, and more experience without admitting, fear of lightning. The feeling ranges all the way from vague uneasiness to frantic terror, and the aggregate amount of mental discomfort thus caused is very large. The *Electrical Review*, in noting the approach of the thunderstorm season, calls attention to the disproportion between the popular apprehension and the actual danger, but there is small consolation in that for the timid ones, all of whom know that the number of deaths from lightning is a negligible fraction in mortality reports, and still they are afraid. The *Review* disbelieves utterly in lightning rods; at least it says that, "as usually put up, they are of practically no use." A tin roof, with metallic spouts connected with underground pipes, it credits with some protective power, but for the dweller in the country no close approximation to safety is attainable. The urbanite, on the contrary, is in no measurable peril, even if he takes no precautions at all, for, though city buildings are often struck, in hardly any instance does serious harm follow. It is well to avoid trees during thunderstorms, and stables containing animals and barns filled with new hay are also to be shunned. It is important to know that people are rarely killed outright by lightning. Many who die from its effects would recover if resort were had to artificial respiration, long continued. The production of lightning is thus explained: "When clouds are formed by the condensation of very minute drops of water from the vapor in the air, under certain conditions these drops exhibit a small electrical charge. As the drops coalesce the capacity increases less rapidly than the quantity of charge, for the reason that two drops of equal size, when they flow together, produce one of only slightly larger diameter, and the capacity is determined by the diameter. On this account the drops formed by the flowing together of the small mist particles, long before they attain such size as to be precipitated as rain, acquire an electrical charge of enormous voltage, sufficient often to leap a distance of a mile through the air."

Seven Months of Extraordinary Activity.

It is now about seven months since the iron trade began to develop the extraordinary activity which has broken all records for volume of business. Prior to that time no indication had been shown of an approaching tidal wave of heavy buying. On the contrary, not a few of the most experienced members of the trade had formed the opinion that the crest of the wave of prosperity had passed, and that a gradually declining demand and a lowering of prices were to be expected. They were fortified in their opinion by a number of conditions which seemed to them conclusive. Prominent among them was the partial failure of the corn crop, the main reliance of a great section of the country. Again, important additions to the producing capacity of iron and steel works had been made during the summer and autumn of 1901, and it was a serious question whether a market could be found for the increased product without disturbing values. Further, European countries were suffering from the collapse of their commercial and industrial activities and European manufacturers had again become keen competitors for international trade, to the great detriment of our export business. We had grown to regard the export trade in iron and steel products as a permanency, and the prospect of its curtailment caused serious misgivings. We had also been educated to the export trade as a profit yielding adventure, owing to the protracted prevalence of higher prices abroad than at home, and the outlook in this direction was thus doubly disquieting.

But the unexpected happened. Instead of a heavily reduced movement of merchandise to the afflicted agricultural districts of the West, it was found that the people of even the worst drought-ridden sections were apparently as freely buying luxuries and necessities as though they had enjoyed a bountiful crop. Their accumulations in previous years of abundance easily enabled them to endure one season's failure. Railroads continued to report increased earnings in these as well as all other sections of the country. After the bogey of crop failure had been thus effectively driven off, it seems as though business interests generally must have acquired a fresh stock of courage. The demonstration of the substantiality of the prosperity of the country was certainly most convincing. From that time the demand for iron and steel products grew as it had never grown before. In an amazingly short period, it will be remembered, the fairly large stocks of pig iron disappeared. When new blast furnaces were blown in or idle stacks were started their product was so easily absorbed as to surprise the entire trade. Contracts for all kinds of materials were freely placed for delivery far into the future. All classes of consumers bought so freely and in such large volume that in every branch of the iron and steel trade manufacturing establishments oversold their capacity, and have ever since been in trouble with their customers because of unsatisfactory deliveries. Instead of the decline in the export trade depressing the market, we have been obliged to go abroad to purchase additional quantities of iron and steel. The whole development of these seven months has thus been most surprising.

The most extraordinary feature of this remarkable period, however, is the fact that notwithstanding the enormous volume of business, surpassing anything previously known, and the marvelous demand which at times caused decided scarcity, the usual accompaniment of a boom has been absent. Prices were maintained on a reasonable basis notwithstanding the temptation to advance them. On previous occasions of this character we have seen prices enhanced beyond all reason, even with less encouragement than that afforded during this period. It would have been an easy matter to have put the price of steel rails several dollars higher, as well as the prices of Bessemer pig iron, steel billets, structural steel and other iron and steel products. That prices have not been unduly advanced may be placed to the credit of the great manufacturing corporations, who have done everything in their power to maintain values at a reasonable level in order to continue to encourage consumption. A remarkable concert of movement obtained among these large manufacturers, even though engaged in dissimilar lines. The lessons of the past were borne in mind when it was determined that so far as they could prevent them no wild advances should be made which would inevitably be followed by a reduced consumption and a considerable slump in prices. We thus see that at the present time, although the producing resources of this country are so overtaxed that it is necessary to import considerable quantities of materials from abroad, the great business of the country is being conducted on the basis of reasonable prices. It is true that some consumers, and possibly a considerable percentage of them, have not been able to cover their requirements, and these are now compelled to pay premiums above the regular or official price to secure the early delivery of such materials as they require. Nevertheless, the large manufacturers continue to exert their utmost influence to supply the trade as far as possible and to prevent an undue expansion in price. It is certainly a most remarkable exhibition of restraint to see these manufacturers avoid the opportunity which might enable them to secure much greater profits.

Some speculation exists as to what the effect on the trade may be of a general revision of prices, which some think must be inevitable by the close of this year, after many contracts taken at comparatively low prices have expired. It is assumed that the price of foundry pig iron, for instance, may be advanced as much as 50 per cent. above the rate ruling on contracts running through the greater part of the current year. Those who take this view of the situation are inclined to the belief that such an advance in cost will greatly diminish the consumption of pig iron, as it will so seriously increase the cost of all articles into which pig iron enters. It remains to be seen, however, whether by that time the conditions which now exist may not be changed. It is almost inconceivable that the high pressure for materials should continue beyond the present year. It is more rational to suppose that by that time the high tide of business will have diminished to such an extent that our manufacturers will be able to take care of the consuming interests and that reasonable views with regard to prices can be maintained.—*The Iron Age.*

New Publication.

Dipping, Burnishing, Lacquering and Bronzing Brass Ware. By William Norman Brown. Publishers, D. Van Nostrand Company, New York, 1900. Price, $1.

The object of this practical little hand book is to reach the local gas fitter, decorator or general "hand man" of the metal trade, in small country towns, and to give him a few good practical hints, so that he may himself be able to do the work offered, and not be compelled to "send it up to London" every time.

Mr. Brown enumerates the articles necessary to constitute the outfit for doing the kind of work he describes, and has an eye to utility and first cost in what he advises. Having been for a considerable time in a London brass finishing shop, he speaks from personal experience. He speaks directly and plainly to the local artisan, much as a shop foreman might instruct his men. For that reason, probably, Mr. Brown does not supply his readers with definitions. This is, perhaps, to be regretted, because when the observations of a skilled worker take the permanent form of a published work it is likely to reach a wider circle of less technical readers than the author may first have anticipated.

Chapter I deals with cleaning and dipping into acid, and "pickle." Chapter II, scratch brushing, burnishing and polishing. Chapter III takes up the subject of lacquering, and enumerates the tools, describes the process, and gives the methods of making lacquers, for the benefit of those who cannot readily obtain them, or who prefer to make their own. In Chapter IV, under the head of bronzing, the process of applying and the composition of black bronzing, Florentine red bronzing and green bronzing are described. A small index is appended.

The book is eminently practical, and contains many useful shop "kinks." The reader may feel very certain that good work has actually been done in the way and with the materials described. The book is also published in London.

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Proposed Legislation for Ventilation.

A movement was begun at the meeting of the National Educational Association held at Detroit, Mich., last summer in the interest of school house sanitation, which has been supplemented by work done in Milwaukee, Wis. The association appointed a committee, consisting of one member from each State and Territory, in the United States, whose duty it was to frame a law which should specify the essentials of a sanitary school house in the matter of lighting, heating and ventilation.

William George Bruce of Milwaukee was selected to make the first draft of such a law and present it to the various members of the committee for modification and approval. After it has passed muster with the committee it will be submitted to the association for adoption. It is intended to introduce the measure in every Legislature of the United States for enactment.

Following is the text of the bill submitted to the committee:

AN ACT—Providing for the heating, lighting and ventilating of public school houses and fixing penalties for a violation of the provisions thereof.

Section 1. Be it enacted by the people of the State represented in the ....: It shall hereafter be unlawful to let any contract for or to construct any public school house, or other building, to be thereafter used for school purposes, the lighting, heating and ventilation of which is not in full accord with the provisions of this act.

Sec. 2. All public school buildings hereafter constructed or remodeled for school purposes must be lighted by windows placed in one rear or side wall of each class and study room, and such windows shall contain glass surface of not less than one-fifth of the floor space of each room; and all desks and seats shall be so arranged that the windows will be on the left, or in the rear, so far as possible, of the pupils.

Sec. 3. All class and study rooms shall contain not less than 15 feet of floor space and not less than 180 feet of air space for each pupil.

Sec. 4. All public school houses or school buildings of more than three rooms each, which shall hereafter be constructed or remodeled for school purposes, must be provided with such heating and ventilating apparatus as will facilitate the introduction of warm air, when occasion requires, into each class or study room, not less than 8 feet above the floor line, with provision for the exit of impure air at the floor line; and the whole shall be so arranged that the required temperature of 70 degrees can be maintained throughout each room even in the coldest weather, and the air changed in each room (combined average measured at inlet and exit openings) at least eight times in each hour, without lowering the temperature or creating a noticeable draft at or below the breathing line.

Sec. 5. All closets and urinals must be so constructed as to provide for the absolute seclusion of the pupil using the same. They must also be provided with vent flues, so arranged that all foul odors and air will be carried out below breathing line.

Sec. 6. Any contract for the construction or remodeling of any school building, not in conformity with the requirements of this act, shall be void; and any public school officer or contractor who shall violate the terms and conditions of this act by letting or accepting any contract for the construction or remodeling of any public school house or school building not in conformity with this act shall be deemed guilty of a misdemeanor, and shall be subject to a fine of not less than $200 nor more than $1000 for each offense.

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The strike of boiler makers, which has been on in Cleveland since January, is at an end, having been settled by arbitration through the good offices of Sheriff Barry of Cuyahoga County. The terms of settlement were: An advance of 15 cents per day; ten-hour work day; half holiday during June, July and August; time and a half for overtime on new work, and double time for overtime on old work. The agreement to continue until January 1.

Oil Fuel and Oil Burners.

BY EGBERT P. WATSON.

With the discovery of new oil fields in various parts of the world interest in the use of liquid fuel has been revived. Many large steamship lines have adopted it extensively and are establishing depots of supply in various ports. Texas oil can be had so cheaply at present that experimental trials have been made with it in lieu of coal by the United Fruit Company, running a line of vessels from New Orleans to the Belize. It was a first test, but proved entirely satisfactory from every point of view. Not only was the round trip the fastest ever made by the company's steamers, but it was also the cheapest. Six firemen were dispensed with and the actual consumption of oil was 850 barrels, as against 218 tons of coal for a similar service. The company are, it is reported, about to adopt oil fuel upon all of their vessels and set up tanks at both ends of the run to supply them. The saving annually is estimated at $9250 for each ship.

It is somewhat anomalous, in view of all the circumstances and previous experience with oil as fuel, that it has not been more generally adopted in years gone by. One reason has been the uncertain supply. Another is the high price of oil as compared with coal in certain places remote from mines. Still another is the unsatisfactory results obtained from oil fuel at different times, on one day giving no trouble and on others nothing could be done with it. This last is by no means unusual, but it is nearly always caused by water in the oil, either as it came from the well or getting into it subsequently. However this may be, oil fuel at present prices is likely to be extensively used, but in comparison with the quantity of coal in sight and known to exist it is still very doubtful whether it will become a formidable rival. Notwithstanding the views of "well-known scientists," whose names are not given, there is no positive knowledge of the extent of the new oil fields, and as soon as the supply is restricted the price will go up until coal will be the cheaper.

In any event, the oil reserve underlying this country will have to be of incredible extent in order to compete with coal for a long term of years. The consumption of the latter is enormous, so great that it would take a very large number of even 300-barrel daily spouters to appreciably lessen its consumption. The spouters aforesaid come into action at once upon striking the oil veins, and cease flowing as suddenly as they commenced, while coal mines continue prolific through decades. It would seem better to make haste slowly in deciding between coal and oil fuel, for although the supply of the latter is adequate to the present demand, it is more than doubtful if it would continue if there was a general call for it.

Many, if not most, of the difficulties and dissatisfaction with the results obtained by using oil as fuel arise from defective burners or from neglecting them. The popular idea of a burner is one that acts as promptly as a household lamp; but even this gives no light unless it is properly managed. If the wick is turned too high there is much smoke and no light, owing to an excess of oil. It is the same with oil burners designed to furnish heat instead of light, for the majority of them, or a large number, are run with a red-yellow flame. If the furnace is filled with this the burner is supposed to be doing its best, but there may be a sea of flame and comparatively little heat. A properly designed and managed burner affords a blue-purple flame and no smoke whatever, the oil vapor only being burned, as with the so-called wickless blue flame oil stoves in domestic use. There are a great many burners for fuel oil in the market, and those who are interested should take pains to see that they get a practicable one before condemning the fuel itself.

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Luther Brothers, Milwaukee, Wis., manufacturers of Gas and Gasoline Engines, Emery Grinding Machines, &c., have been incorporated under the name of the Luther Brothers Company, with a capital stock of $50,000. The officers are: S. S. Newton, president; G. M. Luther, vice-president, and C. J. Luther, secretary and treasurer.

THE LETTER BOX.

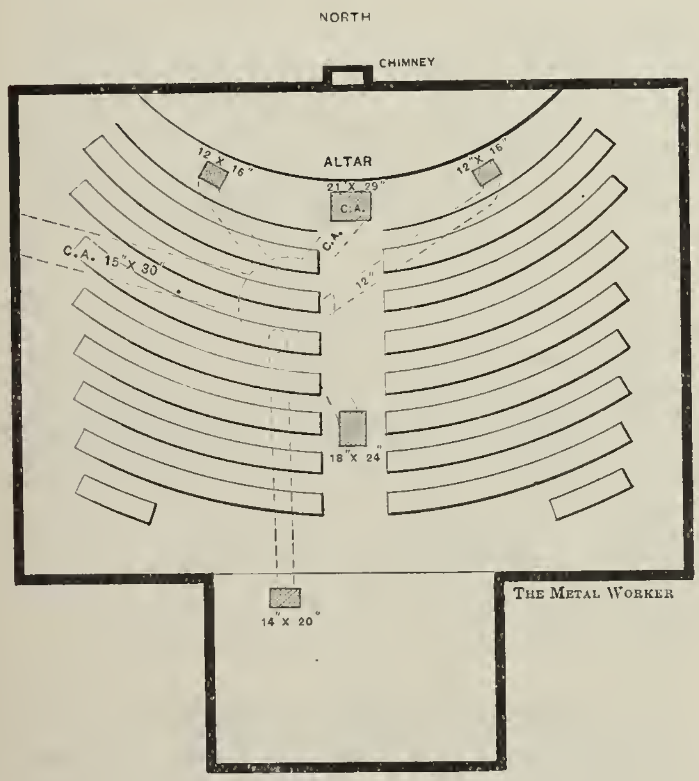
Inquiries in regard to practical questions of general interest are invited, in reply to which we shall be glad to receive suggestions and information from our readers.

Correspondents are requested in all cases to give their names and addresses, which will not, however, be published or disclosed without their consent.

SCANT AIR SUPPLY HINDERED HEATING.

From Nut Meg, Connecticut.—The church heating plan of "L. P. C.," Leipsic, Ohio, given in *The Metal Worker* of April 26, seems to me radically wrong, inasmuch as the whole system—smoke flue, furnace, hot air pipes and registers—is clustered in the south end of the church. I do not know the conditions of the cellar, but if all clear and the southeast corner, marked "Entrance," is the front, why, in the name of all that is holy, was not the smoke flue located on the north end or at the northwest or northeast, so as to accommodate the location of cold air, and the registers distributed in proper positions?

There is a church in the upper part of this State having a hot air system which consists of one 21 x 29 inch register in the center and over the furnace, and one register in each vestry 25 feet due north from the furnace. A 21 x 29 inch register for taking out cold air and creating a circulation is placed in front of the altar. There is also a cold air duct from the northeast corner and air is taken from outside, each being run independently when the conditions permit. Now this church is heated to perfection, and it is but a few feet larger than the one shown by "L. P. C." One advantage I had was the location of the smoke flue. The cellar also was clear. Another reason, I had a 29-inch fire pot furnace placed in the center of the cellar, and according to wishes of the authorities in the church was allowed only one register in the auditorium. The secret of the success was a furnace of sufficient capacity, ample cold air inlet and means for relieving the church of cold air early in the morning; also, the setting of the furnace a little northerly in the cellar. The registers in the vestries were 9 x 12 inches.



Scant Air Supply Hindered Heating.

The only remedy I see in "L. P. C.'s" case is to relocate the furnace more to the north. Place registers for warm and cold air as indicated in the accompanying sketch, and, instead of a 24-inch fire pot, let there be not less than a 29-inch fire pot in the furnace. The pipe in the Sunday school room would, of course, be a long one; but it has one advantage in running southerly. The 21 x 29 inch exhaust cold air register, of 406 square inches area, less fret work, is ample to collect and draw in from the church sufficient cold air to create a circulation. Then when the audience gathers it can be shut off and outside air taken. The total area of pipes, as indicated in the sketch I submit, is 635 square inches. The area of outside cold air supply is 450 square inches. In my opinion the above proportions are sufficient and would give satisfaction. As "L. P. C.'s" sketch shows a wide divergence from the correct principles of hot air heating by furnace, he can congratulate himself that it was some "other feller's" job and none of his fish. If "L. P. C." has the contract to renovate, let him alter and amend this job. A little change may be needed from the sketch I inclose owing to conditions.

JOB BELONGS TO SHEET METAL WORKERS.

From D. D. Hughes, Titusville, Pa.—In *The Metal Worker* of May 10 appears a communication from "F. T. P." of Dallas, Texas, relative to the putting up of steel ceilings. He asks whether the carpenter or the sheet metal worker would be the proper person to do this work. As a metal worker of over 50 years' experience in the trade, it is my opinion that the question never should have been brought up by the trades unions for settlement. It is too ridiculous for mechanics of common sense to discuss the matter as to which class—carpenters or sheet metal workers—belongs the right of putting up steel ceilings, sheet metal cornices, roofing and siding, &c. The writer is the senior partner of the sheet metal working firm of D. D. Hughes & Son. Our firm have in the past 12 or 15 years put up more steel ceilings of the Kinnear & Gager Company's make than any concern in Northwestern Pennsylvania have put up of all other makes of ceiling combined, and we have yet to learn when or where a carpenter or other mechanic, outside of the sheet metal worker, has ever laid claim to placing in position a steel ceiling, sheet metal cornice, siding or roofing, or any other kind of sheet metal work and made a satisfactory artistic or mechanical job of it.

The question raised seems more than strange and should not be entertained for a moment. Any person of common sense and a little good judgment must know that the sheet metal worker, while being the proper person to put up a steel ceiling, would not shine as a stair builder or carpenter and joiner, and *vice versa*. By way of illustration, we will suppose that, in putting up a steel ceiling, a carpenter has to cut a lot of deep panels to fit angles where it might be necessary to make changes in the plan or style of ceiling as made out at the factory. Then the carpenter is in a sorry plight and will have to seek a sheet metal worker if the work is to look neat when done. It is not to be supposed that the hammer, hatchet and saw of the carpenter can be used to as good advantage as the hammer, shears and soldering implements of the metal worker.

Again, many of the ornamental center pieces of metal ceilings are made from galvanized iron and zinc, and should any change be required to be made in them, the handiwork of the sheet metal worker would be necessary to make the work presentable and substantial. I have seen in my time a few cheap steel ceilings put up by carpenters and it was annoying to see how the work was done. The marks of the hammer and saw were plainly visible throughout the whole job. No, it is far from being the work of a carpenter to do the work of a practical sheet metal man, and the carpenter or decorator, so called, who tries to do this work is an interloper and is very apt to be a poor carpenter.

A word to the trades unions, in conclusion. Let men who have spent an honest apprenticeship at the trade work at it and do it alone. Do not try to make poor sheet metal workers out of carpenters. You will have no trouble placing a good carpenter. He knows his business and can always find work at his trade. If a person wants a neat fitting suit of clothes, the practical merchant tailor is the proper one to apply to and not the shoemaker.

STRENGTH OF GALVANIZED IRON.

From A. T., New York.—Kindly oblige a subscriber with a reply through the Letter Box to the following question: What pressure per square inch will galvanized iron from 28 to 20 gauge withstand?

Answer.—On the basis of a tensile strength of 40,000 pounds per square inch for galvanized sheet iron with the grain, No. 20 should have a tensile strength of 1276 pounds per inch in width, and No. 28 a tensile strength of 505 pounds, it being less than one-half the thickness of No. 20. Then the breaking strength of the longitudinal seams, if well riveted and soldered, cannot be trusted for more than 60 per cent. of the total strength, which for No. 20 will be 765 pounds, and for No. 28 303 pounds per inch in width. Then the resulting tensile strength per inch in width divided by one-half the diameter of the cylinder gives the breaking strain per square inch. The safe working pressure should be no more than one-quarter of its breaking strain. As an illustration, the safe working pressure in a cylinder 12 inches in diameter of No. 20 galvanized iron will be $\frac{762}{4} = \frac{191\frac{1}{2}}{6} = 32$ pounds per square inch.

No. 28 will be $\frac{303}{4} = \frac{75.7}{6} = 12\frac{1}{2}$ pounds per square inch.

All thicknesses between these numbers will bear working strains in proportion to their thickness in decimals of an inch.

COLD WATER FROM BOTH FAUCETS.

From G. B., Orange City, Ill.—In *The Metal Worker* of January 11 there is a communication from "I. D. H.," complaining of cold water coming from both faucets. I do not see how this could be otherwise, as the hot water pipe is connected to the cold supply from the street. Is this an actual mistake in the piping, or only an error in the drawing?

Answer.—Investigation based on the inquiry of this correspondent shows that an error was made in the preparation of the cut used, although a correct drawing was furnished to the engraver. The connections at the top of the boiler were transposed.

PROTECTION FROM BREATHING ACID FUMES

From X, Waynesboro, Pa.—Will some of your readers please inform me through the Letter Box where I can obtain a contrivance to put in a man's nostrils so that he can breathe air from a distance? In soldering galvanized iron with the use of acid there is a very disagreeable, unhealthy vapor arising therefrom, and I wish, if possible, to avoid the effects of inhaling this vapor.

BEADING GUTTERS

From the Universal Machine Company, Canton, Ohio.—In *The Metal Worker* of May 10 we notice the inquiry of "C. A. S.," Mankato, Minn., for a suitable method of making various sizes of beads on sheet metal work. In answer, we would say that he should have one of the Universal all steel beading machines, in long lengths, such as are used extensively by sheet metal workers all over the country.

LETTERING CANS.

From C. D., Marshalltown, Iowa.—We should like to find out some cheap, quick means of doing the lettering on cans, the lettering to be in two colors, either printed or stenciled on a painted surface.

HOW DO YOU CONNECT EXPANSION TANKS?

From J. T. W., Philadelphia, Pa.—Will the readers of *The Metal Worker* kindly give their ideas in regard to connecting an expansion tank with a hot water system? Is it best to use a one-pipe connection from the system, or a double connection, making a complete circulation to the tank? I should like to learn from practical men which method is the best and safest and best adapted to the heating of ordinary dwelling houses.

Manufactures in the State of New York.

The census returns for the State of New York for the year 1900 have just been issued by the Census Bureau, Washington. The reports show a capital of $1,651,210,220 invested in manufactures and mechanical industries in 78,658 establishments reported for the State of New York. This sum represents the value of land, buildings, machinery, tools and implements, and the live capital utilized, but it does not include the capital stock of any of the manufacturing corporations in the State. The total value of the products of these establishments for the year is returned at $2,175,726,000, to produce which involved an outlay of $82,075,648 for salaries of officers, clerks, &c.; of $408,855,000 for wages, $221,886,000 for miscellaneous expenses, including land, taxes, &c., and $1,143,791,000 for materials used, supplies, freight and fuel.

The value above given of the products of the manufacturing industries of the State, it is pointed out, is the gross value and not the net or true value. This gross value is found by adding together the value of the products of the separate establishments. But the finished product of one concern is often the raw material for another, in which case the former reappears in the latter, and thus the original cost of certain materials may be included several times in the gross value. The net or true value has been found under the present census by subtracting from the gross value the value of all materials produced in a partly manufactured form. In this way the duplications in the gross value are enabled to be eliminated. Thus the gross value of the manufactured products of New York State for 1900, as stated above, was $2,175,726,000, while the value of materials produced in a partly manufactured form was $850,428,000. The difference is $1,325,298,000, which is the net or true value of the products.

The increase in the amount of capital invested in the manufacturing industries of the State in 1900, as compared with 1890, amounts to about 40 per cent., and the increase in the value of products to over 27 per cent. The number of manufacturing establishments shows a growth of 19.5 per cent. for the decade. The total population of the State is given in 1890 as 7,263,110, an increase of 21.1 per cent. over 1890, while the average number of wage earners has grown from 752,066 in 1890 to 849,056 in 1900, or 12.9 per cent. This shows that about 15 per cent. of the total population of the State are employed in its manufacturing industries.

Pin Holes in Aluminum Castings.

A correspondent of the *Aluminum World*, who complains of being troubled by numberless small holes in his aluminum castings, in consequence of which, when the metal is polished, the holes drag and tear and give the surface an unsightly appearance, asks for a method of avoiding the difficulty, and is answered as follows by the journal referred to:

This is one of the most common difficulties with which the aluminum foundryman has to contend. It almost invariably happens to a more or less extent if copper is the hardening ingredient which is used with the aluminum and is caused by overheating the metal in the crucible. "Soaking" or allowing the metal to remain in the fire, even at a moderate temperature, will also do it. With the alloys in which zinc is used for the hardening ingredient the presence of pin holes is not so apt to occur, but unless the temperature of the melted metal is kept down as far as possible, it is likewise liable to occur with such alloys. In short, the cause of these pin holes is the overheating of the metal.

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The exports to the United States for the ten months ended April 30, 1902, aggregated in value $1,180,158,674, being a falling off of over $70,000,000, as compared with those for the corresponding period of the previous fiscal year. The imports, on the other hand, amounted to $734,517,725, showing a comparative increase of over $78,000,000. The balance of trade in favor of the United States for the period named was $435,640,949, or $148,675,063 less than for the same months of 1901.

TRADE REPORT.

MARKET SUMMARY.

Pig Tin has advanced 1½c. a lb., with light demand.

Copper has fluctuated somewhat; demand is not heavy.

Pig Lead is dull and firm.

Spelter is rather firmer, but dull.

Antimony is unchanged.

Nickel is active and without change.

Aluminum is firm and in good demand.

Tin Plates are quiet, with prices unchanged.

Black Sheets continue in good demand, with prices strong.

Galvanized Sheets are not in quite such heavy demand, but are still active and firm.

Old Metals are quiet and rather weak.

Foundry Iron is very scarce, with prices high and little doing, by reason of scarcity.

Sheet Copper is in good demand, with prices firm.

Sheet Zinc is without change.

Hardware is moving in good volume and prices remain strong.

Wrought Iron Pipe has been advanced 10 per cent. by New York jobbers.

Cast Iron Soil Pipe and Fittings are expected to be advanced in price shortly.

Plumbers' Copper Goods have been marked up 10 per cent. in price.

Solder is 1c. a lb. higher on strength of Pig Tin.

Rivets have stiffened in price.

Wire Nails are firm and active.

Cut Nails are still somewhat scarce and prices firm.

Window Glass is firm at the advance, with light demand.

White Lead is more active and prices very firm.

Spirits Turpentine has advanced 2c. a gallon.

METAL MARKET.

New York, May 16, 1902.

Pig Tin.—Through continuance of the manipulations of the market, both here and abroad, prices of Pig Tin have advanced sharply. Business is, however, still light as to actual consumptive demand, most of the consumers being well supplied. The net advance for the week since our last report has been about 1½c. Jobbers now quote Straits Pig in small lots at 31c. to 32c. per lb., according to quantity. The market at the close was strong, with every appearance of still higher prices. The metal at the present time is thoroughly under the control of large interests, both here and abroad.

Copper.—A manipulating influence was also apparent in this metal. It is believed in the trade that a number of prominent parties, who are interested in the floating of a new Copper company, have endeavored to advance prices and have succeeded to some extent. A number of bullish reports have been floating about the market which have had some effect. A premium on Lake Copper prevailed during the week, but it is regarded in the trade as unwarranted by conditions and therefore not likely to prevail for any length of time. So far as the consumptive demand is concerned, the market was dull, but considerable speculative buying was reported. Lake Ingot in small lots is quoted by jobbers at 13c. to 13½c. per lb., and Casting Copper at 12¾c. to 13c. Exports thus far this month amount to about 5600 tons, showing a heavy falling off as compared with April, which was 4000 less than the month of March.

Sheet Copper.—The demand for Sheet Copper keeps up in good volume, and all the material that the mills are producing appears to be going into consumption. Prices remain firm on the basis of 18c. per lb. for Sheet Copper from store.

Pig Lead.—The market is without change. It is dull and uninteresting, but steady. American Pig in small lots is quoted at 4.45c. to 4½c. per lb. St. Louis advices indicate dullness in the Lead market at that center, with the movement of prices within narrow limits.

Spelter.—This metal is a shade firmer in price, but without any notable increase in the consumptive demand. Western brands in small lots rule at 4.65c. to 4.75c. per lb. St. Louis advices report that the consumptive demand for Spelter at that point is light, and the market in a dull condition with no change in prices.

Sheet Zinc.—The demand for Sheet Zinc is of fair proportions. Prices are unchanged at 6¾c. per lb. for 600-lb. cask lots and 7c. to 7¼c. for smaller quantities.

Antimony—Is unchanged. Hallett's in small parcels is quoted at 8⅝c. to 8¾c. per lb.; U. S. at 8⅜c. to 8½c., and Cookson's at 10¼c. to 10¾c.

Nickel.—There is no change in the market for this metal. Small lots are quoted at about 55c. per lb.

Aluminum.—The demand continues active, and prices are without change. Small lots of No. 1 Ingot guaranteed 99 per cent. pure are quoted at 37c. per lb., and 100-lb. lots at 35c.

Tin Plates.—The market for Tin Plates remains under the same conditions reported for some weeks past. New business is comparatively light, while the deliveries on old contracts continue heavy. The retail trade has picked up somewhat under improved weather conditions. Prices are without change. American Bessemer Coke Plates, IC, 14 x 20, in moderate sized lots delivered at New York and corresponding points, are quoted at $4.85 to $4.95 per box. A further advance of 1½ pence per box in the price of Welsh Plates was reported this week, making 13 shillings 7½ pence, f.o.b. Swansea.

Sheets.—The demand for Sheets continues in large volume, although it is, perhaps, hardly so urgent as it was some time ago. The mills, however, are comfortably filled with orders. It is said that some of the new independent mills are unable to furnish stock to fill the requirements of their customers at the present time, owing to their inability to obtain the raw material. Reasonably prompt deliveries of both Black and Galvanized Sheets can now be had from mills, however, and the stringency which prevailed some time back seems to have entirely disappeared. Jobbers' prices are firmly maintained. No. 27 One Pass Cold Rolled Soft Steel Sheets are selling at about 3.85c. to 3.90c., and No. 24 Galvanized at 4c. to 4.20c.

Chicago advices are as follows: Less demand has been experienced for Light Sheets, there being an absence of large sales and even less movement in jobbing lots. No. 27 Black Shets in small lots from store are quoted at 3.45c. to 3.55c. Galvanized Sheets are quoted at net prices, small lots from store ruling at 4.70c. to 4.75c. for No. 27.

Old Metals.—No change is noted in this market. Demand is on a light order and prices are not very strong. Dealers are paying about the following rates for moderate sized lots, delivered at New York or corresponding points:

Heavy Copper	per lb.	9¾c.
Light and Tinned Copper	per lb.	8¾c.
Heavy Brass	per lb.	8 c.
Light Brass	per lb.	6¼c.
Lead	per lb.	3⅝c.
Tea Lead	per lb.	3¼c.
Zinc	per lb.	2⅞c.
Pure Aluminum Sheet	per lb.	25 c.
Cast Aluminum	per lb.	20 c.
No. 1 Pewter	per lb.	16 c.
No. 2 Pewter	per lb.	8½c.
Tin Plate Scrap, per gross ton	....	to $5.00
Wrought Iron Scrap, per gross ton	$13.00	to 13.50
Heavy Cast Scrap, per gross ton	12.00	to 12.50
Stove Plate Scrap, per gross ton	8.50	to 9.00
Burnt Iron, per gross ton	7.00	to 7.25

M. S. Brooks & Sons, Chester, Conn., manufacturers of Bright Wire Goods, are building an addition to their plant, 64 x 30 feet, of wood, three stories high.

THE PIG IRON MARKET.

New York.—The scarcity of spot Pig Iron continues and large premiums are being paid. Quite a number of consumers are helping themselves with Scotch Pig Iron, which is being sold in small lots. We quote, for summer delivery, Northern Iron, at tidewater, No. 1 X, nominal, $21.50 to $22; No. 2 X, $19.75 to $20; No. 2 Plain, $19.25 to $19.50. Tennessee and Alabama brands are as follows: No. 1 Foundry, $20.50 to $21; No. 2 Foundry, $19 to $19.50; No. 3 Foundry, $18.25 to $18.50.

Chicago.—There has been an increased volume of business in Pig Iron during the week and the market has developed a steadier tone, prices being less unsettled and varying between relatively narrow limits. Sales have been mainly of Northern Iron and, as a rule, have been confined to small lots, from carloads to some hundreds of tons. In the aggregate the tonnage has been considerable, considering the difficulty in placing of contracts. Sales, however, for immediate delivery have been rare, the little Iron offering being held at prices which are practically prohibitive. Compared with those current a week ago there has been an advance of about $1 a ton on Northern Iron and 50c. to $1 on special makes of Southern Iron. We quote as follows:

Lake Superior Charcoal	$23.00	to	$24.00
Local Coke Foundry, No. 1	22.00	to	22.50
Local Coke Foundry, No. 2	21.00	to	21.50
Local Coke Foundry, No. 3	20.50	to	21.00
Local Scotch, No. 1	22.00	to	23.00
Ohio Strong Softeners, No. 1	24.00	to	24.50
Southern Silvery, according to Silicon	20.40	to	20.90
Southern Coke, No. 1	19.65	to	20.65
Southern Coke, No. 2	19.15	to	20.15
Southern Coke, No. 3	18.65	to	19.15
Southern Coke, No. 1 Soft	19.90	to	20.65
Southern Coke, No. 2 Soft	19.15	to	19.90

Philadelphia.—The scarcity of Iron for prompt delivery appears to be as great as at any time during the year. Relief has been expected by the arrival of foreign Iron. So far, however, the deliveries from that source have been very small and very much behind time. Where any Iron can be obtained for prompt delivery anything from $20.50 to $21 for No. 2 X, Foundry, and even higher than that, is paid. The scarcity of Iron for May and June shipment is very great and is not likely to be overcome for many weeks, and it may be two or three months. In a general way quotations are about as follows for Philadelphia and nearby points, with 50c. to 75c. additional for May, June and July shipments:

No. 1 X Foundry	$20.50	to	$21.50
No. 2 X Foundry	19.75	to	20.50
No. 2, Plain	19.25	to	19.75

Pittsburgh.—The scarcity of Pig Iron shows no relief and many of the foundries and other plants are running short handed for want of material. It is clear that in spite of our enormous production of Pig Iron the consumption is in excess of it. No. 2 Foundry Iron is selling at $20.75 to $21, Pittsburgh, with some sellers asking higher prices.

Cincinnati.—Word has finally been received that the $12 Birmingham agreement was rescinded and the association disbanded on May 1. It is believed that the leading Southern interests are already so well sold up as to be out of the market for the next three months, but it is understood that there is quite a little lot of unsold Iron among other furnaces for delivery after this month. This Iron has been put on the market and is selling on the basis of $16 to $16.50, Birmingham, for No. 2 Foundry Iron, for delivery beginning with July. Most of the furnaces are asking and getting $16.50 to $17 for the same grade of Iron for May and June delivery. It is thought that in about 90 days the deliveries will become pretty closely abreast of the demand. The situation at present is an exceedingly strong one. While Iron may go somewhat higher, the general feeling is that it is now somewhere near the limit of the advance. We quote f.o.b. Cincinnati, as follows:

Southern Coke, No. 1	$19.25	to	$19.75
Southern Coke, No. 2	18.75	to	19.25
Southern Coke, No. 3	18.25	to	18.75
Southern Coke, No. 4	17.75	to	18.75
Southern Coke, No. 1 Soft	19.25	to	19.75
Southern Coke, No. 2 Soft	18.75	to	19.25
Southern Coke, Gray Forge	17.75	to	18.75
Southern Coke, Mottled	17.75	to	18.75
Ohio Silvery, No. 1	21.85	to	22.35
Ohio Silvery, No. 2	21.35	to	21.85
Lake Superior Coke, No. 1	22.35	to	23.10
Lake Superior Coke, No. 2	21.35	to	22.10
Lake Superior Coke, No. 3	20.35	to	21.35

St. Louis.—Very quiet conditions rule in the Pig Iron market, and while scattered sales are being made, the present demand is neither heavy nor urgent. For the limited amount of material that is available at this time, however, there is an active demand at good round figures. A considerable volume of buying is expected to come into the market to cover requirements for the last half of the year. The position of the furnaces to meet this demand is a topic much discussed in Iron circles. The following is about the range of prices for cash, f.o.b. St. Louis:

Southern, No. 1 Foundry	$19.25	to	$19.50
Southern, No. 2 Foundry	18.50	to	18.75
Southern, No. 3 Foundry	18.00	to	18.25
Southern, No. 4 Foundry	17.50	to	17.75
No. 1 Soft	19.00	to	19.25
No. 2 Soft	18.50	to	18.75

CHICAGO REPORT.

Scrap Iron and Steel.—There have been freer offerings of Old Rails, and prices for such have declined, but other kinds of Scrap have been well maintained in sympathy with the strong market for Pig Iron, while Turnings have been advanced 50c. per ton. We quote dealers' buying prices for carload lots, Chicago delivery, as follows:

	Per net ton.		
Country Wrought Scrap	$14.00	to	$14.50
Machinery Cast	....	to	13.00
Malleable Cast	12.00	to	12.50
Stove Plate (free from burnt)	10.00	to	10.50
Burnt Iron and Grate Bars	8.00	to	9.00
Sheet Iron and Hoops	8.00	to	9.00
Plow Steel	12.00	to	13.00
Breaking Stock	....	to	11.00
Old Boilers—whole (Iron)	9.50	to	10.00
Old Boilers (Iron) cut in single Sheets and Rings	12.00	to	12.50
Old Gas Pipe and Boiler Tubes	12.00	to	12.50
Cast Borings	8.50	to	9.00
Turnings	12.00	to	12.50
Horseshoes	14.00	to	14.50

Old Metals.—A little firmer tone has prevailed for Copper, and other kinds of Old Material have been well sustained with a fair volume of business. Following are the prices paid by dealers in this market:

	Per lb.
Copper Wire and Heavy	10½c.
Copper Bottoms	9⅝c.
Copper Clips	10½c.
Red Brass	11 c.
Yellow Brass	8¼c.
Red Brass Borings	9¾c.
Yellow Brass Borings	7¼c.
Light Brass	6½c.
Pipe Lead	3.70c.
Tea Lead	3.35c.
Zinc	3 c.
Tin Foil	21 c.
Pewter, No. 1	17½c.
Pewter, No. 2	10 c.
Aluminum	20 c.

Old Rubber.—A firmer tone has been developed, and Old Rubber Shoes are higher, with less free offerings and a good demand. White Rubber is also stronger, and prices ¼c. higher. Other articles are unchanged:

	Per net ton.	Per lb.
Garden Hose	$25.00	.....
Air Brake Hose	42.00	.....
Rubber Shoes	....	7.10c.
Rubber Car Springs	....	5 c.
Inside Bicycle Tubing	....	22 c.
Outside Tubing	....	6 c.
Black Rubber	....	4 c.
White Rubber	....	8½c.

Rags.—The market has remained slow and easy with liberal offerings and only a moderate demand. Rags, Chicago delivery, 70c. to 75c. per 100 lbs.

Anthracite Coal.—Since the advent of the strike of the operators in the coal fields no new orders have been accepted for Anthracite Coal here; everything at the moment being held in abeyance, dependent upon the action to be taken by the workers. Under the circumstances, prices are entirely nominal. The following is the schedule of prices in force for all shipments to be made in the month of May, subject to a discount of 40c. Should work be resumed another advance of 10c. per ton will become operative on June 1, when the discount will be 30c. per ton.

	Grate.	Egg and Stove.
Chicago	$5.75	$6.00
Milwaukee, Wis	5.75	6.00
St. Louis	6.20	6.45
Kansas City, Mo	8.25	8.50

Thomas J. Creighton has opened a Brass foundry on Chase street, Fall River, Mass. Mr. Creighton has been connected for 30 years with the Fall River Machine Company.

THE HARDWARE TRADE.

The past week has witnessed a continuance of the excellent trade which has prevailed since the opening of the season. Retail merchants report business as active, although the attention farmers are giving outdoor work interferes somewhat with the current trade. As a rule, however, they are enjoying such a measure of prosperity as justifies them in purchasing rather more liberally than usual. The activity in building, too, has a stimulating effect on business. Practically all mechanics are fully employed and at good wages. The Hardware market has not been affected by any important changes in price since our last report, but is characterized by a firm tone with something of a tendency toward higher prices. Almost every day the representatives of jobbing houses, who are in correspondence with manufacturers, find that there is a stiffening in the price of some line or article, not usually in the way of open and general advances, but rather in the withdrawal of some special discount or concession which has previously been in force. There is a good deal of difficulty in obtaining season goods, and those who have not covered their requirements are likely to be short of the articles when the demand sets in. In a great many other lines, too, manufacturers are behind their orders and the merchants are obliged to hurry up shipments of goods. Export business feels, perhaps, a little more than it has the effect of the great activity which prevails in the home market, as some manufacturers are disposed to neglect their foreign business. Others, and undoubtedly the greater number and the wiser, are taking care of their customers abroad and endeavoring to extend still further their export trade.

NOTES ON PRICES.

Wrought Iron Pipe.—The jobbers of steam goods in the metropolitan district have announced under date of May 16 an advance of 10 per cent. on the prices of Wrought Iron Pipe on all orders filled from New York stock. There has been no advance whatever in the price of goods shipped from the mills. It is said that the scarcity of Pipe has become more marked within the past few weeks and that comparatively few of the jobbers have excessive quantities of Pipe on hand. Owing to this condition of affairs the steam jobbers determined to take advantage of the situation and make the consumer pay for whatever material he needs for prompt shipment from New York stock. It is also understood that there will be an advance within a short time in the price of Cast Iron Steam Fittings and Steam Goods of all kinds. Continued and increasing scarcity of all lines of goods made from iron and steel is said to be the chief element prompting these advances.

Plumbers' Copper Work.—An advance of 10 per cent. has been made in Plumbers' Copper Goods. This advance affects Copper Boilers, Copper Sinks, Copper Lined Tanks and all goods in which irregular or special sized sheets of Copper are used in the manufacture. There has been no change whatever in the price of regular Sheet Copper, but special Copper Sheets have been advanced. The manufacturers of the goods above mentioned have each their particular size and weight, and as their stock is ordered in limited quantities and is not considered of a "regular" nature, they find considerable difficulty in getting their wants promptly attended to by the makers.

Cast Iron Soil Pipe and Fittings.—Despite the fact that at a meeting, which was held about two weeks ago, the manufacturers of Cast Iron Soil Pipe and Fittings decided to make no change in the prices of these goods, it is now announced that they are about to issue new prices, which will show a slight advance over the prices which now prevail. It is said that the deliveries of Pig Iron are not coming up to the requirements of the foundrymen and that unless relief comes immediately, the trade will suffer considerable hardship in procuring their supplies. The jobbing trade expect an advance at any time, and the retailers need not be surprised if the jobbers announce the change prior to that made by the manufacturers. We understand that such a change is now under advisement.

Solder.—The further sharp advance made this week in Pig Tin has been accompanied by higher prices in Solder. Jobbers now quote Half and Half, guaranteed, in small lots, at 20 to 20½ cents per lb., and No. 1 at 17½ to 19 cents.

Rivets.—Some of the manufacturers of Rivets have recently been withdrawing some of their extremely low quotations, and as a result the market is more even and has a somewhat better tone than heretofore. The demand is active.

Cast Iron Goods.—In view of the condition of the market for the raw material the prices of Cast Iron Goods are, as a rule, decidedly firm, and on some lines, such as Grindstone Fixtures, Well Wheels and Stebbins' Molasses Gates, higher prices have recently been announced.

Washers.—The demand for Washers is heavy and prices are firmly maintained, as a consequence, it is said, of agreement among the manufacturers of these goods.

Wire Nails.—An active demand continues for Wire Nails, and there is a noticeable improvement in the promptness with which mills are making shipments. In New York the local stocks are becoming better assorted. Prices are well adhered to, small lots from store being quoted at $2.30 per keg.

Cut Nails.—There continues to be some difficulty in getting shipments of Cut Nails from mill as promptly as the trade requires. The demand is of good proportions, and the market is firm. Small lots of Cut Nails from store, New York, continue at $2.30 per keg.

Window Glass.—The demand for Glass in the New York market is light. Prices are firm, Window Glass of single and double strength from store being quoted by jobbers at 89 per cent. discount.

White Lead.—A considerable quantity of White Lead in Oil is going into consumption daily. Trade is referred to as being more active than for some time past. Quotations are firm and unchanged. White Lead in Oil in retail quantities is selling at 6½ to 6¾ cents per pound.

Spirits Turpentine.—The local market for Turpentine has a stronger tone than last week, resulting from Southern advices of light receipts and large buying by export houses. The demand here is light with a firm market. Jobbers' prices rule about 2 cents higher, at 48 to 48½ cents per gallon.

Experiments With Acetylene.

Experiments to determine the liability of liquids and compressed acetylene to explode were tried recently at Berlin, Germany, says the *Scientific American*. Several cylinders loaded with 4 kilos of liquid acetylene were placed in position with a valve at the top. The gas which collected at the upper part of the cylinders was under a pressure of 725 pounds per square inch. A cartridge containing 1 kilo of picric acid was then applied and exploded by electricity, with the result of blowing off the top of the cylinder, but the acetylene was not detonated, and the cylinder emptied itself on the gaseous acetylene. Another cylinder was charged with 3½ kilos of liquid and a 200 gram cartridge placed in the bottom; when the electric current passed through into it the liquid acetylene exploded, destroying the cylinder. A cylinder of liquid acetylene was fired at with a rifle without explosion resulting. neither was a cylinder of acetylene disturbed by the explosion of a quantity of picric acid close to it. The experiments proved that acetylene is undisturbed by sympathetic discharges, but that the liquid will explode always if a detonator is in contact with it.

THE MAX AMS MACHINE COMPANY, 372 Greenwich street, New York City, have been incorporated with a capital stock of $220,000. The company recently erected a shop at Hoboken, N. J., for the manufacture of Canning Machinery. The incorporators are Max Ams, Charles Ams and Julius Brenzinger.

Gas Asphyxiation,

The treatment of cases of "gassing," as our British brethren term it, where workmen are rendered unconscious by breathing atmosphere charged with gases which are not life sustaining, is rather vague in the minds of many superintendents, and it has occurred to us that the rules covering such cases might be of interest to our readers. Inert gases do not produce such serious results as carbonic oxide, which has a decidedly toxic effect, paralyzing the red blood corpuscles, or sulphurous and cyanogen gases. The former class can be cured by the following rules, while the latter can be relieved until hospital treatment is available. These rules were compiled in 1896 by the *Chemical Trade Journal* of Manchester, England, a journal devoted to manufacturing chemistry:

RULES FOR DEALING WITH DANGEROUS GASES.

GENERAL REGULATIONS.

No person must enter any boiler or tank which has been recently used for the storage of any poisonous liquid or gas, or enter any dangerous workings, drain, sewer, culvert, gas purifier, flue, vitriol chamber or tower (whether closed or open), except under the following conditions:

1. A respirator properly charged and in good condition must be worn. If the gases cannot be absorbed a safety pipe and face piece supplied with air or oxygen must be substituted, according to the manager's instructions.
2. The person entering must be efficiently secured around the waist by a rope, the opposite end of which must be securely fastened to the ground at the surface or at the top of the tower or flue, &c.
3. A man must be in attendance and ready to render assistance if necessary. For underground work and in difficult positions two men must always be at the surface ready to assist.

HOW TO TREAT WHEN GASSED.

Remove as speedily as possible into the open air and place in a well ventilated position near the boiler, so as to keep as warm as possible.

In bad cases use the oxygen bottle and lung exercise simultaneously from the outset.

USE OF OXYGEN BOTTLE.

The bottle must never be used without a reducing valve.

If Conscious.—Very slightly turn on the valve so that the oxygen flows in a gentle stream. Place the glass tube in the mouth and let the oxygen be breathed until relief is obtained.

If Unconscious.—Place the oxygen delivery tube in one corner of the mouth, closing the lips around it. Keep the oxygen flowing in a gentle, continuous stream, alternately closing and opening the nostrils to inflate and deflate the lungs. (Gently pressing the chest when the nostrils are open assists the deflation.)

If the Teeth are Set.—Close the lips, insert the oxygen tube in one nostril, and alternately close and open the other in the manner just described. The complete inflation of the lungs is indicated by the blowing out of the cheeks. Carefully avoid too great a pressure in the lungs.

LUNG EXERCISE.

This is not often necessary, but if the oxygen does not act within a reasonable time use the following additional help to respiration: Lay the body at full length, face upward, slightly raising the shoulders with a folded coat, the head falling well back. Loosen the clothing around the neck and chest. Grasp the arms above the wrist and steadily draw them straight out above the head, holding them there for two seconds. Then turn the arms down, bending the elbows and at the same time pressing them firmly against the sides of the chest, and hold them in that position for two seconds. Continue this treatment about 15 times a minute for 20 minutes without cessation, or until consciousness is restored.

TRADE NOTES.

The Federal Mfg. Company, with main office at 419 Market street, Camden, N. J., have been incorporated with a capital stock of $300,000 by Nicholas H. Wagner, Samuel Hawkins and George H. B. Martin, to manufacture Cream Separators.

The Syracuse Heater, made by the Syracuse Heater Company, Syracuse, N. Y., forms the subject of an advertisement on another page of this issue. This Heater is described as a "Twentieth Century Surprise," and as the only full flue base Heater on the market.

In consequence of the death in April of N. M. Beach, former treasurer and general manager of the Bridgeport Brass Company, J. F. Kingsbury, Jr., who was secretary, has been made treasurer of the company, and W. F. Malloy, for some years manager of the New York branch, has been chosen secretary to fill the vacancy made by Mr. Kingsbury's advancement. Mr. Malloy will continue in charge of the business at 19 Murray street, New York.

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ROOFING SUPPLIES, METALS, TIN PLATES, &c.

REVISED MAY 16, 1902

Aluminum—

No. 1 Aluminum (guaranteed over 99% Pure), in ingots for remelting.

Small lots	⅌ ℔, 37¢
100-℔ lots	⅌ ℔, 35¢

Aluminum Sheet, B. & S. gauge.
In lots of 50 ℔s or more.

Wider than	6-in.	14-in.	24-in.
And including	14-in	24-in.	30-in.
	⅌ ℔	⅌ ℔.	⅌ ℔.
Nos. 13 to 19	$0.42	$0.44	$0.47
" 20	.44	.46	.49
" 21 to 23	.46	.48	.51
" 24	.46	.50	.53
" 25	.47	.51	.54
" 26	.47	.54	.59
" 27	.48	.57	.62
28	.48	.57	.64
29	.49	.60	.69
" 30	.50	.64	.77

Note.—Lots of less than 50 ℔s 5¢ ⅌ ℔ extra.

Antimony—

Cookson	⅌ ℔. 10¼@10¾¢
Hallett's	⅌ ℔. 8⅜@8¾¢
U.S.	⅌ ℔ 8⅜@8½¢

Brass, Roll and Sheet...... 30%

Conductors—

Corrugated.

Round or Square.—

Galvanized ½ or more. N'st'd	70&10%
" Not Nested	70&5%
" Plain Round, ½ or more. Nested	70&10%
Galvanized, Plain Round, Not Nested.	70&5%

Spiral Lock Seam Pipe—

Galvanized	60@60&10%

Spiral Riveted.

Galvanized	40%

See also *Elbows and Shoes; Eave Trough Miters; Strainers, Conductor.*

Conductor Strainers—

See *Strainers, Conductor*

Copper—

Lake Ingot	13 @13½¢
Casting	12¾@13 ¢
Sheet and Bolt	18¢ ⅌ ℔ basis
Cold Rolled Sheets	19¢ ⅌ ℔ basis
Cold Rolled and Polished Sheets	20¢ basis
Planished Sheets	21¢ basis
Bottoms, Pits and Flats	⅌ ℔ 22¢ basis

Eave Trough Galvanized

Territory	L. C. L.
Eastern	75&10%
Central	75&7½%
Southern	70&12½%
S. Western	70&10%

Terms, 2% for cash.

Eave Trough Mitres—

Lap or Slip Joint	list, 25%

Elbows—Plain Adjustable—

Eastern List.

Tin	30%
Galvanized	30%
Perfect Elbows	40%

Stove Pipe—

Four-Piece

	4	4½	5	5½	6-inch.	
No. 1.	$0.80	.85	.90	1.00	1.05	per doz.
No. 2.	.65	.70	.75	.80	.85	"
No. 3.	.60	.63	.65	.70	.80	"

Elbows and Shoes—

Galvanized	60%

Gasoline—

See *Petroleum Products.*

Iron, Sheet—*Black.*

	One Pass, C. R. Soft Steel.	B. G. Cleaned.
Nos. 14 to 16	⅌ ℔. 3.50	3.55¢
Nos. 18 to 21	⅌ ℔, 3.60	3.65¢
Nos. 22 to 24	⅌ ℔, 3.70	3.75¢
Nos. 25 and 26	⅌ ℔, 3.80	3.85¢
No. 27	⅌ ℔, 3.90	3.95¢
No. 28	⅌ ℔, 4.00	4.05¢

Russia, Planished, &c.

Genuine Russia, according to assortment	⅌ ℔ 11@14 ¢
Do. Stained	6@10½¢
Patent Planished	⅌ ℔ A, 11¢; B, 10¢ net

Galvanized.

Nos. 14 and 16	⅌ ℔ 3.45@3.60¢
Nos. 18 and 20	⅌ ℔, 3.70@3.90¢
Nos. 22 and 24	⅌ ℔, 4.00@4.20¢
No. 26	⅌ ℔, 4.25@4.50¢
No. 27	⅌ ℔, 4.55@4.80¢
No. 28	⅌ ℔, 4.85@5.10¢
No. 30	⅌ ℔, 6.00@6.30¢

No. 20 and lighter, 36 inches wide, 25¢ higher.

Lead—

American Pig		4.45@4½¢
Bar		5@5½¢
Pipe	6½¢	20% off
Tin Lined Pipe	12½¢	20% off
Block Tin Pipe	42½¢	20% off
Sheet Lead	7¼¢	20% off

Old Lead in exchange, 3¼¢ ⅌ ℔.

Mitres Eave Trough—

See *Eave Trough Mitres.*

Nickel—

Per ℔	55@60¢

Paints Oils &c.—

Leads—

Lead, American White, in Oil; Lots of 500 ℔ or over	6¼ @ 6½
Lots less than 500 ℔	6½ @ 6¾
Lead, White, in oil, 25 ℔ tin pails, add to keg price	@ ½
Lead, White, in oil, 12½ ℔ tin pails, add to keg price	@ 1
Lead, White, in oil, 1 to 5 ℔ assorted tins, add to keg price	@ 1½
Lead, White, Dry in bbls	5¾ @ 6
Lead, Red, bbls., ½ bbls. and kegs: Lots 500 ℔ or over	@ 6
Lots less than 500 ℔	@ 6½

Oils—

Linseed, City, raw	⅌ gal. 67@67½¢
Linseed, City, boiled	69@69½¢
Linseed State and West'n, raw	66@66½¢

Spirits Turpentine—

In Southern bbls	48 @48½¢
In machine bbls	49 @49½¢

Putty—

In bulk	$1.25
In bladders	2.25
In cans 12 ℔ to 25 ℔	2.25
In cans 1 ℔ to 5 ℔	3.25

Petroleum Products—

In Barrels (Barrel Included)

Stove Gasoline	⅌ gal. 10½@11¢
Kerosene	⅌ gal. 12@13¢

Pipe Drain...... 40%

Pipe, Spiral—

See *Conductors.*

Registers—

List Sept. 2, 1901.

Black Japanned	60&10@60&10&5%
White Japanned	60&10@60&10&5%
Nickel Plated	60&10@60&10&5%
Bronze Finishes in Imitation of Gold, Silver, Copper or Bronze	60&10@60&10&5%
Electroplated in Brass, Bronze or Copper	60&10@60&10&5%
White Porcelain	60%
Solid Brass and Bronze Metal	50%

Roofing Material—

1 Ply Tarred Paper	⅌ ton. $31.00@32.00
2 Ply Tarred Paper	⅌ roll, 108 sq. ft. 55@60¢
3 Ply Tarred Paper	⅌ roll, 108 sq. ft. 80@85¢
Slater's Felt	⅌ ton, $35.00@36.00
Roofing Pitch	⅌ bbl. $3.50

Rosin—

Common and Good—Strained.

Rosin, C. & D.	⅌ bbl.	$1.62½@$1.65
Rosin, E. & F.	⅌ bbl.	1.70 @ 1.75
Rosin, G. & H	⅌ bbl.	1.80 @ 1.85
Rosin, I. & K	⅌ bbl.	2.10 @ 3.70
Rosin, M. & N.	⅌ bbl.	3.05 @ 3.55

Shoes and Elbows—

See *Elbows and Shoes.*

Slate Roofing—

f. o. b. cars, Quarry Station.

	According to size.
Pennsylvania:	
Best Bangor, ⅌ sqr	$3.25@$5.00
No. 1 Bangor Ribbon. ⅌ sq	3.25@ 3.50
Pen Argyle, ⅌ sqr	3.25@ 4.00
Peach Bottom, ⅌ sqr	5.25@ 6.10
No. 1 Chapman, ⅌ sqr	3.50@ 4.35
No. 1 Penna. Black	$2.75@3.80
Unfading Washington Bangor	$2.25@4.25
Vermont:	
Sea Green, ⅌ sqr	$2.00@$3.40
Purple, ⅌ sqr	4.25@ 4.75
Unfading Green, ⅌ sqr	3.50@ 4.50
Red, ⅌ sqr	6 50@10.50
Maine:	
Brownville, Unfading Black. No. 1	$5.00@7.20

Solder—

½&½ guaranteed	20 @20½¢
No. 1	17½@19 ¢

Prices of Solder indicated by private brands vary according to composition.

Soldering Fluids—

	Per Pound. Barrels	Smaller Q'ntities
Concentrated Flux	4c	5c
Eureka Flux:		
Triple Strength	3c	3½c
Extra Concentrated	4½c	5c
Crystal		7c
Gedney's Fluid	2c	2c
Lennox Fluid	2c	3c
Perfection Flux	3c	3½@4c
Yager's Salts, 1 lb. bottles		each, 60¢

5 lb. bottles, per lb., 45¢

Soldering Coppers—

Per ℔	20@22¢

Spelter—

Western Spelter	4.65@4.75¢

Spiral Pipe—

See *Conductors.*

Stove Pipe Elbows—

See *Elbows, Stove Pipe.*

Stove Trucks—

See *Trucks, Stove.*

Strainers, Conductor—

Galvanized	50%

Tin Pigs and Bars—

Banca, pigs. ⅌ ℔	31 @32 ¢
Straits, pigs, ⅌ ℔	31 @32 ¢
Straits, in bars, ⅌ ℔	32 @33 ¢

Tin Plates, American

Charcoal Plates, Bright—

N. B.—The price of 20 x 28 sizes double the price of 14 x 20.

Calland Grade:		
IC,	14 x 20	$7.50
IX,	14 x 20	9.00
IXX,	14 x 20	10.25
IXXX,	14 x 20	11.50
IXXXX.	14 x 20	12.75
Melyn Grade:		
IC,	14 x 20	7.00
IX,	14 x 20	8.50
IXX,	14 x 20	9.75
IXXX.	14 x 20	11.00
IXXXX	14 x 20	12.25
Allaway Grade:		
IC,	14 x 20	6.50
IX,	14 x 20	7.60
IXX,	14 x 20	8.70
IXXX,	14 x 20	9.80
IXXXX,	14 x 20	10.90

Coke Plates, Bright—

Bessemer Steel, or equal to J. B. Grade, full weight	IC, 14 x 20	$4.90@5.00
" "	IX, 14 x 20	$6.00

N. B.—The reduction per box on lighter Plates than IC, 14 x 20, is as follows:

100 ℔	15¢
95 ℔	20¢
90 ℔	25¢
85 ℔	30¢

Terne Plates—

N. B.—The following prices are for IC 20 x 28, the rate for 14 x 20 being half as much. IX is usually held at $2 per box advance for 8 to 10 ℔ coating and $2.50 to $3 advance for 15 ℔ and upward.

About 40 ℔ coating	$16.00@16.50
About 30 ℔ coating	15.25@15.75
About 20 ℔ coating	13.25@13.75
About 15 ℔ coating	11.25@11.75
About 8 ℔ coating	@10.00

Boiler Plates, American—

IXX, 14 x 26..(112 sheets)	$12.50
IXX, 14 x 28..(112 sheets)	13.50
IXX, 14 x 31..(112 sheets)	15.00

Troughs Eave—

See *Eave Trough.*

Trucks, Stove—

Improved Lock Frame, per doz	$15.00
Steel Lock Frame, per doz	18.00
Daisy Improved pattern, ⅌ doz	18.00

Tubes and Tubing—

Brazed Brass, List June 6, 1898	40%

Copper and Bronze, 3c per lb. list more than Brass.

Seamless Brass Tubes, net list Feb. 6 1899

Tin	50%
Galvanized	50%
Fittings for do	40%

Zinc—

600 ℔ casks ⅌ ℔	6¾¢
Per ℔	7¼¢

PLUMBERS' AND STEAM FITTERS' SUPPLIES.

Boilers, Galvanized—

Standard Boilers:	
30 gal	72½%
35 and 40 gal	70%
Other sizes up to 52 gal	65%
52 gal. and above	55&5%
Extra Heavy Boilers:	
18 to 52 gal	60%
53 gal. and above	50&5%

Brass Work, Plumbers'—

List of December 7, 1896.

Compression:	
Basin Cocks	65%
Bath Cocks and Double Bath Cocks	65%
Bibs	65%
Bibs, Flanged	65%
Fuller:	
Bibs	70%
Basin Cocks, Nos. 1 to 4	70%
Bath Cocks, No. 4½	$2.40 each net
Ground Key Work:	
Finished Bibs	55&5%
Rough Bibs	70%
Rough Stop and Stop and Waste Cocks	70@70&5%
Rough Stop and Stop and Waste Cocks, Patented	65@65&5%

Miscellaneous—

Basin Clamps	60@65%
Basin Plugs	60@65%
Chain Stays	60&5@70%

Iron Boiler Couplings:

		Lead Pipe.	Iron Pipe.
Plain Face	⅌ set	$0.95	$1.05
Ground Face	⅌ set	$1.00	$1.10

Sink or Bath and Wash Tray Plugs	60@65%
Soldering Nipples	70&5@75%
Soldering Unions	70&5@75%
Union Elbows, Hot Water Heating	75@75&15%

Cocks, Valves &c.—

Cocks—

Brass—

Air and Radiator Air	75@75&5%
Gas Meter and Union Meter	65@70%
Steam	65@70%

Iron—

All Iron	70@70&10%
Iron with Brass Plugs	65@70%

Valves—

Brass—

Check	65@70%
Garden Hose	65&10@70%
Gate	65@65&10%
Globe and Angle, hose outlet	65@65&10%
Globe, Angle and Cross	65&10@70&5%
Horizontal, Vertical and Angle Check	65@65&10%
Hot Water Radiator	75%
Radiator	70&10%
Safety	65%
Safety, Low Pressure	65%
Jenkins' Disc:	
Check	65%
Gate	65%
Globe, Angle and Cross	70%
Radiator	80%
Radiator, Corner	75%
Safety	65%

Iron—

Iron Body	70@70&5%
Foot	65@70%
Jenkins Bros.':	
All Iron, except Gate	40&5%
All Iron Gate	35@40%
Iron Body, except Gate	60%
Iron Body Gate	50@50&5%
Swing Check	50%

Earthenware—

Brown Glazed Wash Tubs	20%
Brown Glazed Sinks, Kitchen and Pantry	20%
Basins, Urinals and Hoppers	45%
Closet Bowls, Sundries, Washouts and Pedestals	50%

Fittings—

Brass Fittings—

Finished	70@75%
Rough	70@75%
Bushings	70@75%
Nipples	70@70&2½%
Unions, Rough and Finished	70@70&5%

Iron—

Cast Iron Fittings, Black and Galvanized, Standard sizes	65@70%
Cast Iron Bushings and Plugs	65@70%
Cast Iron Flanges	65@70%
Cast Iron Floor Flanges	65@70%
Malleable Iron Fittings (from ℔ list)	50%
" " Bushings	65@70%
" " Unions	65@70%
" " Unions, Flange	60&10@70%
" " Pipe Hangers, Universal	50%
Wrought Iron Nipples	65@70%
" " Couplings	60@65%
" " Long Screws	60@65%

Lavatories—

Porcelain Enameled Iron	30@30&10%

Oakum—

Plumbers' Oakum, 50 lb. bales, ⅌ ℔	2½¢

Pipe—

Brass, Iron Pipe Size—

⅛	¼	½	¾ to 3 Inch
$0.38	.34	.29	.23 ⅌ ℔

Cast Iron Soil—

List Feb. 25, 1901.
2 to 6 inch inclusive.

Standard	50&5%
Extra Heavy	60&7½%
All Fittings	65&10%

7 to 15 inch.

Pipe and Fittings, Standard and Extra Heavy	50%

Wrought Iron—

List Feb. 15, 1900.

	Black.	Galv
⅛ to ½ inch	55%	41%
¾ to 12 inch	65%	50%

Radiators—

Standard List.

Steam	50&2½%
Hot Water	50%

Sinks, Etc.— Cast Iron—

	Black.	Galv.
Sinks, Square, Half Round and Corner	60@65%	60@65%
Sink Legs.	60%	60@65%
Sink Backs	60%	60@65%
Boiler Stands, Cast Iron	50@10@50%	
Cesspools, Cast Iron	50%	

Wrought Steel Sinks—

New Era, Galv'd and Enameled	70&5%
New Era, Painted	50&10%
L. & G.	50%

Traps—

Drawn Lead Traps, List June 3, 1901	50&5%

Tubs, Bath—

List April 1, 1902.

Cast Iron Enameled Bath Tubs.

Regular Patterns. Guaranteed	80%
All Special Patterns	15%
Solid Copper, list of Feb. 1, 1899	40%

Solid Porcelain—Class A, 30%: B, 40%; C, 50%.

Steel Clad Copper Lined, list of Feb. 1, 1899	50@55%

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Acetylene Gas Generators.
International Heater Co., Utica, N. Y.

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Lalance & Grosjean Mfg. Co., 19 Cliff St., N. Y.

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Steel & Iron Aluminum Coating Co., Connellsville, Pa.

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Janney, Steinmetz & Co., Phila., Pa.

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Janney, Steinmetz & Co., Phila., Pa.

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Kemp, C. M. Mfg. Co., Baltimore, Md.

Cement Tampers.
Kramer Bros., Dayton, O.

Coal Vases.
Cincinnati Stamping Co., Cincinnati, Ohio.

Coils.
National Pipe Bending Co., New Haven, Conn.

Conductor Pipe and Elbows.
American Steel Roofing Co., Middletown, O.
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Lawrence-Letts Elbow Co., Ltd., Waverly, N. Y.
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Cory, Uzal & Co. 210 Water St., N. Y
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Graff Furnace Co., 208 Water Street, New York.
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Hart & Crouse Co., Utica, N. Y.
International Heater Co., Utica, N. Y.
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Magee Furnace Co., Boston, Mass.
Mueller, L. J. Furnace Co., Milwaukee, Wis.
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Gas Heaters. (*See Stoves and Ranges, Gas.*)

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Lunch Boxes.
Seavey Mfg. Co., Boston, Mass.

Metal Ceilings. (*See Ceilings, Metallic.*)

Metal Patterns.
Pedersen, A. L. & Co., Chicago, Ill.

Metal Window Frames.
Smith-Warren Co., Boston, Mass.

Mica.
Munsell, Eugene & Co., 218 Water St., New York.
Ohio Mica Co., Canton, Ohio.
Rutland Fire Clay Co., Rutland, Vt.

Milk Cans.
National Enameling & Stamping Co., 78 Beekman St., N. Y.

Oil Heaters. (*See Stoves and Ranges, Oil, Vapor and Gasoline.*)

Ovens, Portable.
Blodgett, G. S. Co., Burlington, Vt.
Howes, S. M. Co., Boston, Mass.

Patent Solicitors.
Hamlin, G. R., Washington, D. C.
Howson & Howson, Philadelphia, Pa.
Stocking, E. B., Washington, D. C.

Patterns.
Cope, Geo. W., Detroit, Mich.
Gobeille Pattern Co., Cleveland, Ohio.
Gray, G. L., Galesburg, Ill.
Vedder Pattern Wks., Troy, N. Y.

Perforated Sheet Metal.
Harrington & King Perforating Co., Chicago, Ill

Pig Iron.
Wister, L. & R. & Co., Philadelphia, Pa.

Pipe Cutting and Threading Machines.
Curtis & Curtis Co., Bridgeport, Ct.
Saunders, D. Sons, Yonkers, N. Y

Pipe Joint Cement.
Callahan, Geo. & Co., 218 Front Street, N. Y.

Pipe Vises.
Walworth Mfg. Co., Boston, Mass.

Pipe, Water and Gas.
Millar, C. & Son Co., Utica, N. Y.

Plumbers Tools, Specialties and Supplies.
Anderson Coupling Co., Portland, Ct.
Barstow Stove Co., Providence, R. I.
Clayton & Lambert Mfg. Co., Detroit, Mich.
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National Pipe Bending Co., New Haven, Conn.
Pierce, Butler & Pierce Mfg. Co., Syracuse, N. Y.
Walworth Mfg. Co., Boston, Mass.
Wolff, L. Mfg. Co., Chicago, Ill.
Young, Jos. H., Boston, Mass.

Plyers, Pipe Expanding.
Anderson Coupling Co., Portland, Ct.

Pokers and Lifters.
Shields, W. H. & Co., Troy, N. Y
Troy Nickel Works, Troy, N. Y.

Potato Masher.
Vogel, Wm. & Bros., Brooklyn, N. Y.

Presses and Dies.
Bliss, E. W. Co., Brooklyn, N. Y.
Gordon, W. J., Phila., Pa.
Miner & Peck Mfg. Co., New Haven, Conn.
Niagara Machine & Tool Wks., Buffalo, N. Y.
Phila. Machine Tool Co., Phila., Pa.
Robinson, J. M. Mfg. Co., Cincinnati, Ohio.
Stiles & Parker Press Co., Brooklyn, N. Y.
Swaine, F. J. Co., St. Louis, Mo.

Pumps
Lawless, John H., Jersey City, N. J.
Noppel Pump Co., Hartford, Conn.

Punching Machines.
Bertsch & Co., Cambridge City, Ind.
Bliss, E. W. Co., Brooklyn, N. Y.
Clough, R. M., Tolland, Conn.
Robinson, J. M. Mfg. Co., Cincinnati, Ohio.
Toledo Mach. & Tool Co., Toledo, O.

Radiators, Hot Air.
Burton, W. J. & Co., Detroit, Mich.
Cole Mfg. Co., Chicago, Ill.
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Radiators, Steam and Hot Water.
American Radiator Co., Chicago, Ill.
Gurney Heater Mfg. Co., Boston, Mass.
Pierce, Butler & Pierce Mfg. Co., Syracuse, N. Y.

Range Boilers.
Koven, L. O. & Bro., 50 Cliff St., N. Y
Wolff, L. Mfg. Co., Chicago, Ill.

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Frink, I. P., 551 Pearl St., New York.

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Challenge Refrigerator Co., Grand Haven, Mich.
Gurney Refrigerator Co., Fond du Lac, Wis

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Dighton Furnace Co., Taunton, Mass.
Hart & Cooley Co., New Britain, Conn.
Independent Register Co., Cleveland, Ohio.
Seavey Mfg. Co., Boston, Mass.

Registers, Draft.
Matthews, H. A. Mfg. Co., Seymour, Ct.

Roofing, Asphalt.
Asphalt Ready Roofing Co., 136 Water St., N. Y.

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Asphalt Ready Roofing Co., 136 Water St., N. Y.
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Dixon, Jos. Crucible Co., Jersey City, N. J.
Perkins, J. L. & Co., Chicago, Ill.
Rutland Fire Clay Co., Rutland, Vt.

Roofing Cork.
Stowell Mfg. Co., Jersey City, N. J.

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Roofing and Siding, Iron and Steel, Corrugated and Plain.
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Chattanooga Steel Roofing Co., Chattanooga, Tenn.
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Millar, C. & Son Co., Utica, N. Y

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Excelsior Tool & Mch. Works, St. Louis, Mo.
Gordon, W. J., Phila., Pa.
Keene, Geo. C. & Co., Cincinnati, O.

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Miner & Peck Mfg. Co., New Haven, Conn.
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Peck, Stow & Wilcox Co., 27 Murray St., New York.
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Stiles & Parker Press Co., Brooklyn, N. Y.
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Merchant & Co., Philadelphia, Pa.
Meurer Bros. Co., Brooklyn, N. Y.
Montross Metal Shingle Co., Camden, N. J.
Penn Metal Ceiling & Rfg. Co., Phila., Pa.

Shot.
Colwell Lead Co., 63 Centre St., N. Y.

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Sinks.
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Chattanooga Steel Roofing Co., Chattanooga, Tenn.
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Mullins, W. H., Salem, O.
Rasner & Dinger, Pittsburgh, Pa.

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Galt, Jno. & Sons, 253 Broadway, N. Y.
Salem Nail Co., 279 Pearl St., N. Y.

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Gunster & Forsyth, Scranton, Pa.

Snow Guards.
Clason Arch. Metal Works, Providence, R. I.

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McClure & Co., Pittsburgh, Pa.
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Taylor, N. & G. Co., Philadelphia, Pa.

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Burgess Soldering Furnace Co., Columbus, Ohio.

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Heath, C. C. & Co., Phila., Pa.
Howes, S. M. Co., Boston, Mass.
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Troy Nickel Works, Troy, N. Y.

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Troy Nickel Works, Troy, N. Y.

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Ohio Stove Co., Portsmouth, O.
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Meurer Bros. Co., Brooklyn, N. Y.
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Gummey, McFarland & Co., Phila., Pa.
McClure & Co., Pittsburgh, Pa.
Merchant & Co., Philadelphia, Pa.
Meurer Bros. Co., Brooklyn, N. Y.
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Meurer Bros. Co., Brooklyn, N. Y.
Washburne, E. G. & Co., 46 Cortlandt St., New York.

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Water Coolers.
National Enameling & Stamping Co., 78 Beekman St., N. Y

Water Closets.
Colwell Lead Co., 63 Centre St., N. Y.

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Clark, Henry N. Co., Boston, Mass.

Water Heaters.
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Kemp, C. M. Mfg. Co., Baltimore, Md.

Wind Gates.
Miner & Peck Mfg. Co., New Haven, Ct.

Window Frames, Metal.
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THE METAL WORKER.

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Original letters of reference should not be inclosed with replies to advertisements appearing in these columns as they are frequently mislaid and lost. A copy of the reference will serve the purpose.

HELP WANTED.

A competent TINNER; steady work the year round; good wages; apply at once. Paine Bros., Ashtabula, Ohio. May 17

At once, two first-class CORNICE MAKERS; $3 per eight hours; steady work. Elizabeth Cornice Works, Elizabeth, N. J. May 17

Strictly first-class SUPERINTENDENT for tin can plant outside New York; all replies strictly confidential; splendid opening for right man. "Tin Can," care *The Metal Worker*, New York. May 17

AT ONCE.—A good, honest and sober man who understands heating, plumbing and tinning in all branches; a man who cannot wipe joints need not apply for this job; a steady job promised to right kind of man; we will pay good wages. "P. S.," care *The Metal Worker*, New York. May 17

Two or three all around TIN and SHEET IRON WORKERS; must be sober; pay from $2.25 to $2.50 per day; regular work. A. J. Shide, 103 South Forsyth street, Atlanta, Ga. May 17

By the Master Tin and Slate Roofers' Association of Washington, Pa., men who can do TIN and SLATE ROOFING; open shops. Inquire of Jos. H. Brice, secretary, 222½ West Chestnut street, Washington, Pa. May 17

A good, reliable TINNER and SLATER; must be good on inside and outside work; steady work with good pay to the right man. James Rostron, Sidney, Ohio. May 17

Wanted, nonunion PLUMBERS; will pay $3.25 per day of eight hours; steady work for the right men; only first-class men need apply. A. M. Griffen, Plainfield, N. Y. May 17

Two good SKYLIGHT and CORNICE MAKERS. G. Drouve Company, Bridgeport, Conn. May 17

Young man in office of stove manufacturer; one who can use Smith Premier writer preferred; must know how to sell goods; opportunity for advancement. "N. 312," care *The Metal Worker*, New York. May 17

At once, a good, steady, sober, all around PLUMBER and TINNER; steady position to the right party; state age and wages expected. James Fitzgibbon, Red Bank, N. J. May 17

A first-class TINNER who can do assortment work; steady employment; state age, experience and wages wanted; married man preferred. Cooney & Geiger, Indianapolis, Ind. May 17

A first-class TINNER who can do all kinds of work in a shop, on buildings, furnace and blower work; steady work to a good man. Hoernel Hardware Company, Racine, Wis. May 17

First-class SALESMAN, having acquaintance with builders and architects in New York City, for ranges and furnaces. The J. L. Mott Iron Works, 84 Beekman street, New York. May 17

A good all around man that understands PLUMBING and TINSMITHING; work all year round; must give reference. Henry Schafer, 17 Central avenue, Albany, N. Y. May 17

CLERK; a retail hardware firm in a West Pennsylvania town of 12,000 wants an active, energetic clerk; one who has had experience in a general hardware store in a town of 5000 to 15,000 preferred, and who has good ideas about displaying stock and keeping it in shape; permanent position to right party; state salary expected; is a splendid, big storeroom and the town a very desirable one to live in. "Clerk," care *The Metal Worker*, New York. May 17

Two good SLATERS and TINNERS; steady work; good wages. J. B. Crowe, Alliance, Ohio. May 17

An experienced PLUMBER, capable of making wiped joints and understand the reaction of furnaces, hot water and steam work; must be sober, a thorough mechanic, also capable of managing a shop; married man preferred. Davidson Heating & Construction Company, Hanover, Pa. May 10

A competent TINSMITH; steady work year around for the right man; apply at once. W. H. Wilcox, 517 East Main street, Little Falls, N. Y. May 10

Several first-class TRAVELING SALESMEN, familiar with the tin plate and sheet metal trade to represent us in portions of Virginia, North and South Carolina, East Tennessee and Northern Georgia; no one need apply except those familiar with the business and can begin work at an early date. N. B. Handy Company, Lynchburg, Va. May 10

A CORNICE MAKER who can do a little cutting and understands inside and outside work; eight hours; $4 per day; steady work. Guilfoy Cornice Works, San Francisco, Cal. May 10

TINSMITH, first-class, to take charge of shop; blow pipe and exhaust work; first-class pattern cutter; state wages wanted and qualifications; steady position, New York. "A. S., 14," care *The Metal Worker*, New York. May 10

A first-class, all around TINSMITH to take charge of shop; must be familiar with power machinery, able to handle men and a hustler; state wages and experience. "Able," care *The Metal Worker*, New York. May 10

A young man with some experience, acquainted with the metropolitan district, to wholesale stoves, ranges, furnaces and refrigerators, also cover the State of Connecticut; a young man of right habits, character and ability will be appreciated and have a permanent position. J. Brown, Bedford, Mass. May 10

Two first-class CORNICE MAKERS for in and outside work; apply at once; $3 per day for steady, sober men. Newburgh Cornice Works, Newburgh, N. Y. May 10

At once, a first-class PLUMBER that has had experience at first-class plumbing; am willing to pay good price for right man; must be temperate; none others need apply. Fleming & Crown, Brattleboro, Vt. May 10

A good TINNER; one with some knowledge of iron work preferred; permanent job for good man; none other need apply. E. W. Wilcox, Albion, N. Y. May 10

We could use a few first-class all around men on PLUMBING, STEAM and GAS PIPING and SHEET METAL WORK; wages, $15 per week; nine hours per day. Hull Brothers Company, Danbury, Conn. May 10

Two first-class CORNICE MAKERS; one first-class FURNACEMAN; two first-class TINNERS and JOBBERS; wages, $3.50 per day, eight hours; must be steady and reliable men; send references. C. B. Smith, corner King and Fourth avenue South, Seattle, Wash. May 10

Two TINSMITHS; fair wages and steady work by the year; for further particulars apply Gfell & Bailey, Norwalk, Ohio. May 10

A young man as PLUMBER and GAS FITTER in town west of Pittsburgh; state wages expected; steady work for right man; first come first served; write at once. G. Whitehill, Butler, Pa. May 10

Experienced SALESMAN who calls on the hot air furnace trade to handle our registers on commission: new feature in hot air registers; state territory covered. The American Castings Company, Akron, Ohio. May 10

A FORMER and POWER PRESS HAND; must have experience and also run a cornice press. "E. A. C.," care *The Metal Worker*, New York. May 10

A good all around TINNER, SHEET IRON and FURNACE WORKER; must be sober and reliable; state wages wanted, age and experience; give references; a good, quick workman can have steady work the year around. P. Y. Jones, 4 Third street, Fond du Lac, Wis. May 10

METAL WORKERS on punches and riveters, &c.: steady work near New York. "B. C.," care *The Metal Worker*, New York. May 3

Reliable, energetic TINNER; good wages and steady work to the right party. J. Kuchler, 325 West Forsyth street, Jacksonville, Fla. May 3

Ten first-class STOVE MOUNTERS to work on gas ranges. Abendroth Bros., Port Chester, N. Y. May 8

SITUATIONS WANTED.

Good MECHANIC at tinsmith, furnace and range work; also good at bench work; eight years' experience; city or country. R. Nathan, care H. Sacks, 1487 Second avenue, New York. May 17

As FOREMAN, CUTTER or work at the bench in galvanized iron, cornice and skylight shop or general job work; city or country work within 100 miles of New York City preferred. Adolf Klein, 403 East Eleventh street, New York. May 17

By a competent young married man as STEAM HEAT, GAS or WATER PIPE FITTER in city or country; automatic sprinkler and steam work a specialty; 14 years' experience. James Smith, 654 Washington street, New York. May 17

By a first-class in and outside CORNICE MAKER; also a good sheet iron worker; could furnish good reference; steady position. "R. B.," 24 Ann street, Rondout, N. Y. May 17

TIN and SHEET IRON WORKER, any kind (piece or day), or general jobbing shop. Johnson, 536 West Twenty-seventh street, New York City. May 17

By an experienced CORNICE and SKYLIGHT MAN (40); can work from plans as cutter and foreman or assistant in cornice shop or general metal works; would prefer New York or vicinity; nonunion. "R. N.," care *The Metal Worker*, New York. May 17

By a good, all around PLUMBER; please state wages. P. Keller, 132 Gold street, Brooklyn, N. Y. May 17

June 1, in cornice and skylight shop, by a reliable, first-class BENCH HAND; can cut patterns and lay out work if necessary. "M. H.," care *The Metal Worker*, New York. May 17

By a first-class STEAM and HOT WATER FITTER; good all around jobber; good reference if required. "H.," care *The Metal Worker*, New York. May 17

Steady work, by a first-class PLUMBER, STEAM, HOT WATER and GAS FITTER of 20 years' experience; can do some tinning; can figure and take charge of work; sober and quick workman; city or country. "Plumber," 249 Highland avenue, Somerville, Mass. May 17

By a practical STEAM and WATER FITTER, PLUMBER and TINSMITH; can lay out work and install the same; good on furnaces; can make anything for tin shop; a thorough mechanic. "C.," care of "P.," 300 Union street, Jersey City, N. J. May 17

By a young man with two years' experience in tin and furnace work where there is a chance for advance; steady, no bad habits. Lock Box 623, Auburn, Ind. May 17

As FOREMAN, CUTTER or ESTIMATOR in cornice and skylight works, by a thoroughly practical and up to date man; the West preferred. "Practical," care *The Metal Worker*, New York. May 17

By a good, reliable SALESMAN, thoroughly up to date in heating, to travel or local; position desired by June 1; can give present employer's name as reference; closing out business. "Salesman 517," care *The Metal Worker*, New York. May 17

PLUMBER; first-class, experienced; first-class jobbing shop preferred; references; or would take charge of shop; up to date, competent on plans, &c.; lay out work, &c. "Steady," care *The Metal Worker*, New York. May 17

STEAM and HOT WATER EXPERT wants a steady position; thoroughly competent on the various systems of heating high or low pressure; power work; able constructor; new or old plants; can take full charge of any sized job or jobs; references asked and given to shops out of New York City. "Steam," 123 West Forty-sixth street, New York City. May 17

A good, reliable FURNACE SALESMAN; thoroughly up to date in heating; can give present employers as reference, as they are retiring from business; either traveling or local work; can commence June 1. S. E. Slater, 643 Lexington avenue, New York. May 17

STOVE SALESMAN, now traveling New England, will be open for an engagement July 1; would like to connect myself with a good live firm having an up to date line. "Stoveman," care *The Metal Worker*, New York. May 10

By a first-class MECHANIC on steam or hot water boilers or light machinery, bench or floor; knows how to handle men to best advantage; 15 years' experience as foreman; can furnish reference. "Foreman," care *The Metal Worker*, 117-119 South Fourth street, Philadelphia, Pa. May 10

Side line wanted by SALESMAN having established trade in New York and Pennsylvania with hardware and house furnishing trade. "Salesman," P. O. Box 383, Royersford, Pa. May 10

By a New York licensed plumber in country; can do jobbing or new work, take charge or estimate; sober, honest, quick and industrious. Thos. S. Moran, 71 West Ninety-sixth street, New York. May 10

By a young man of seven years' experience in the plumbing business, also in steam, hot water and gas fitting; can furnish best of reference as to style of work, habits, &c. Arthur A. Harding, 802 Third street, South Boston, Mass. May 10

By a practical TIN and SHEET IRON WORKER, understanding all kinds of work usually done in country shops; strictly temperate. George Edgar, Stamford, Conn. May 10

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or will organize company, giving capitalist great opportunity to make good investment for manufacturing patent chimney cap and ventilator, for railroads, buildings and general use. Investigation solicited.

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A pushing man with small capital to take retiring senior partner's place in a well paying general heating and metal business downtown New York City. Address "D. A. C.," care *The Metal Worker*, New York.

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Owing to having other interests in the manufacturing line, will sell Hardware, Stove, Furnace, Mantle and Jobbing business, at a very reasonable price and on very reasonable terms. Installed 83 furnaces last season and 55 Mantles.

Battle Creek is a city of 25,000 inhabitants, and there is at present 63 new houses in course of construction here, and prospects of over 300 being built this year.

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A complete stock of Stoves and Tinware, including store, building and residence in Western Missouri. Excellent farming community. Correspondence solicited. Address

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☐ Letterer
☐ Analytical Chemist
☐ Mechanical Engineer
☐ Machine Designer
☐ Mechanical Draftsman
☐ Foreman Machinist
☐ Foreman Toolmaker
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☐ Foreman Blacksmith
☐ Foreman Molder
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☐ Electrical Engineer
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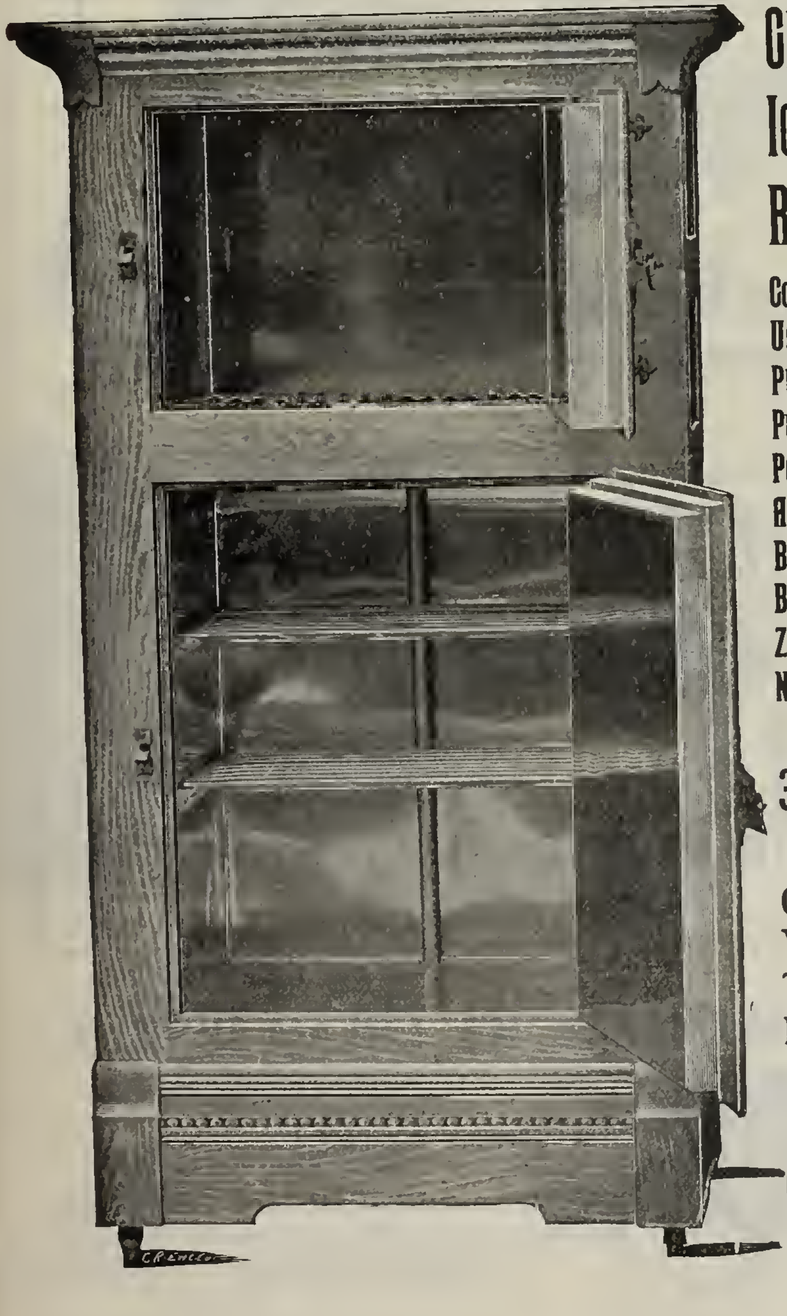

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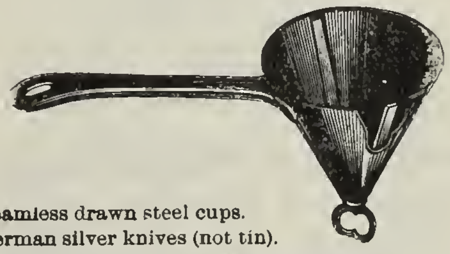

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A USEFUL handbook for tinners and other mechanics, treating simple problems in pattern cutting, such as are of daily occurrence in the shop. An elementary manual for the young tinsmiths A handy reference for all sheet metal workers.

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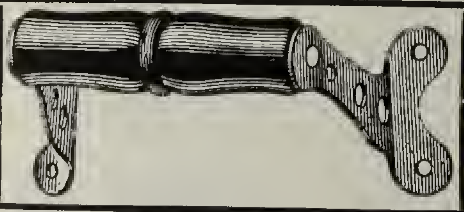
THE HIGHEST IN QUALITY.		WRITE FOR PRICE.
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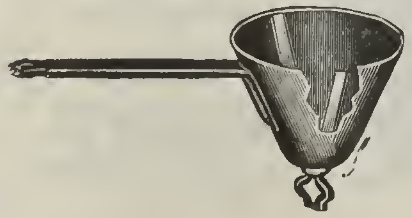

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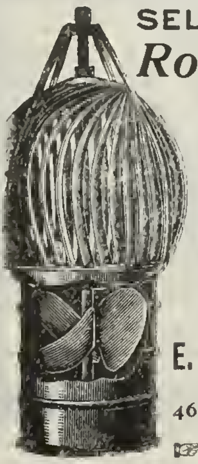

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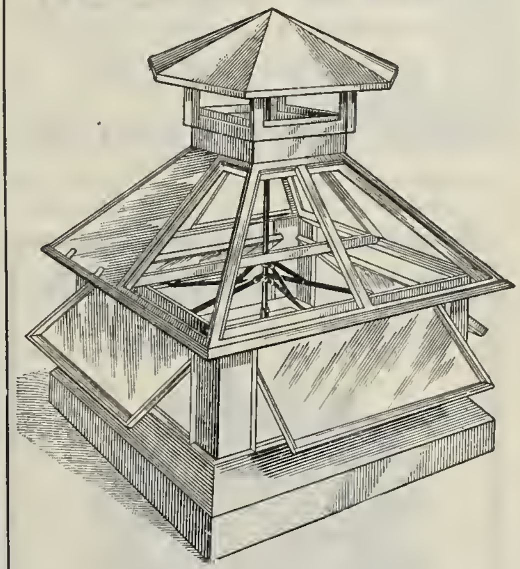

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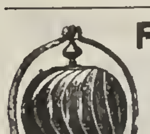

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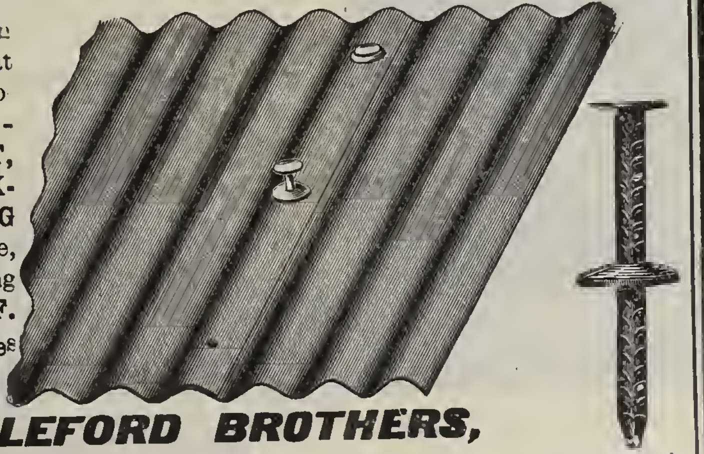

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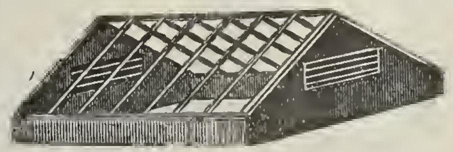

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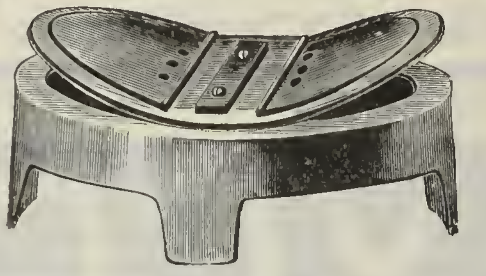

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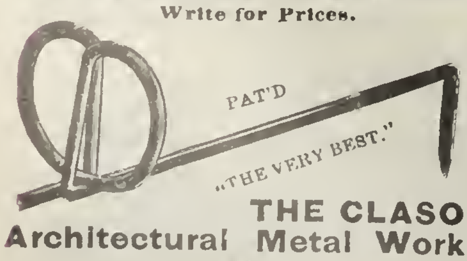

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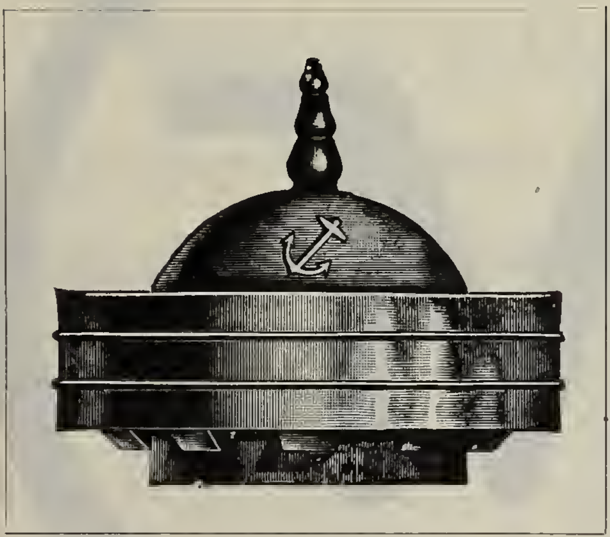

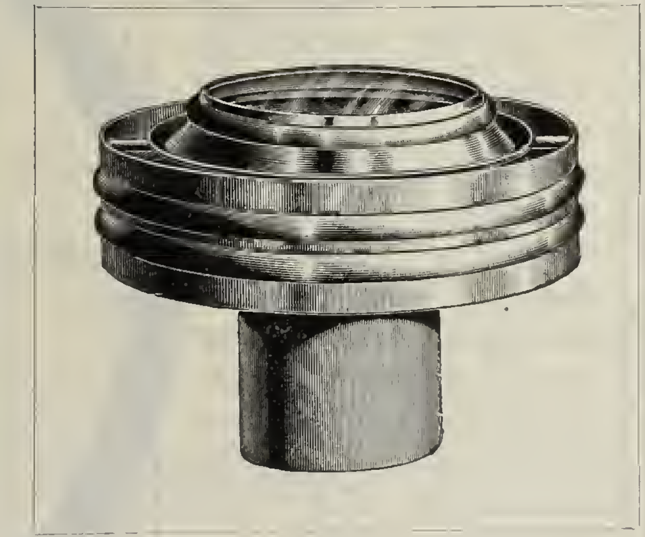

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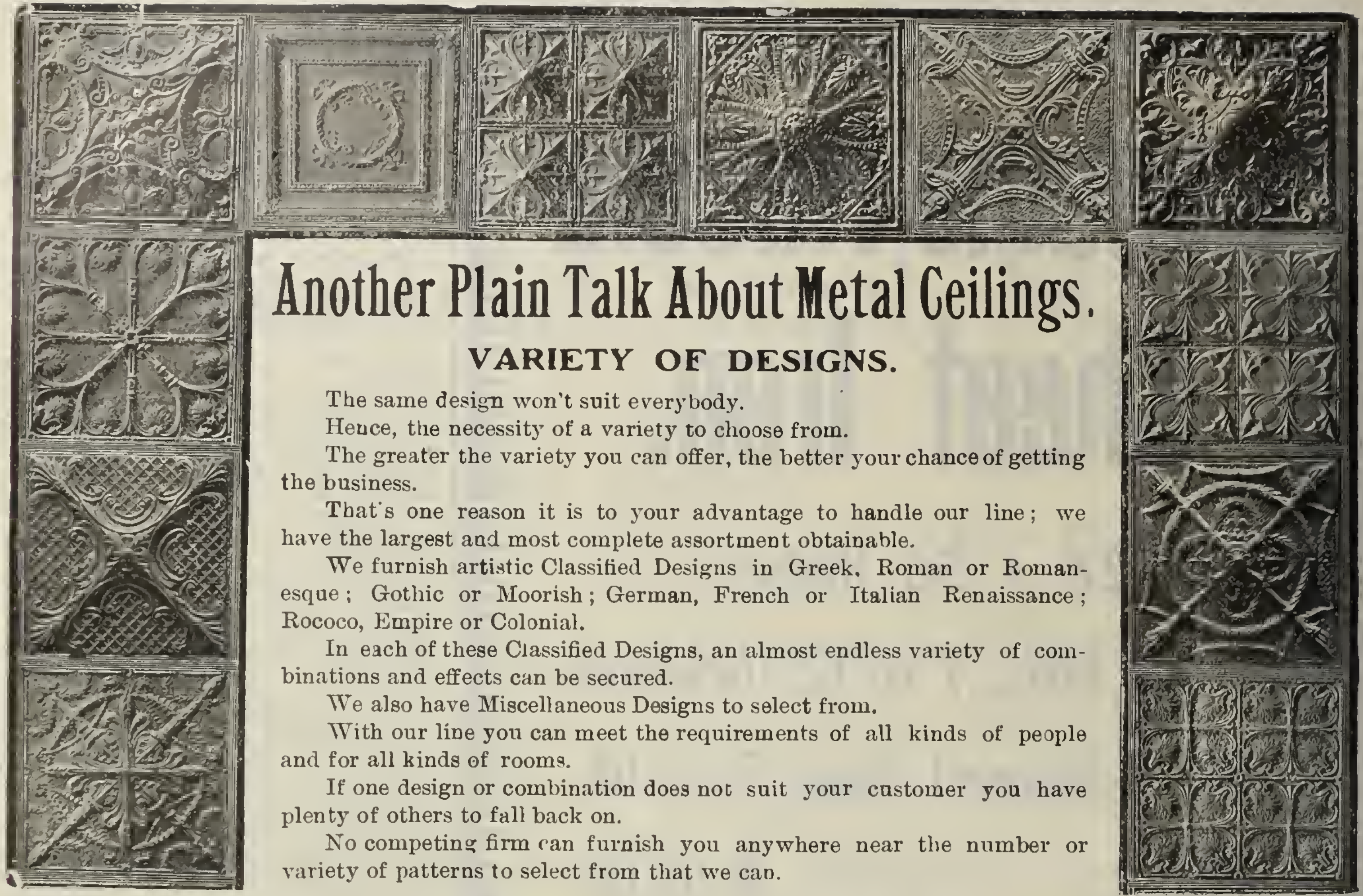

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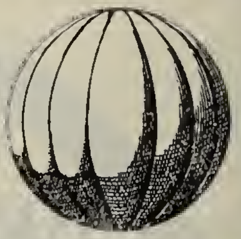

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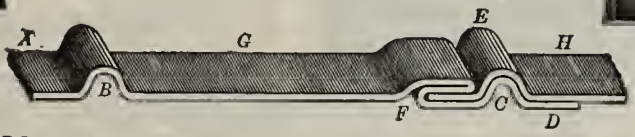

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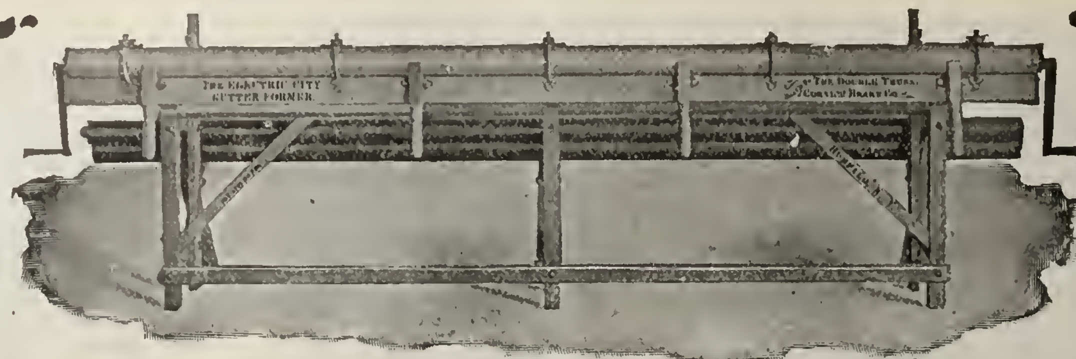
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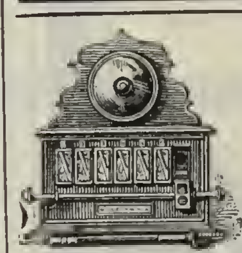

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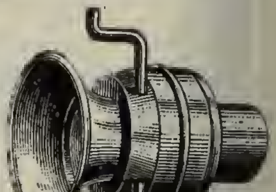

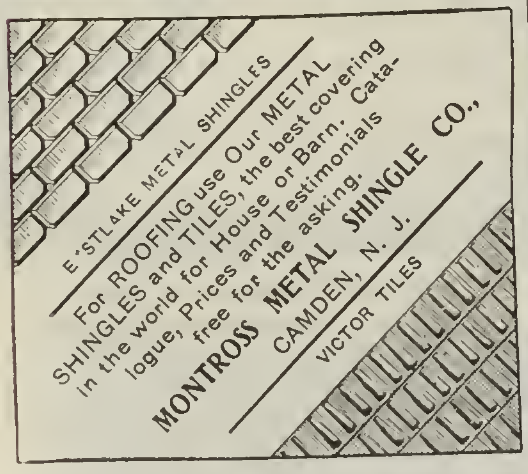

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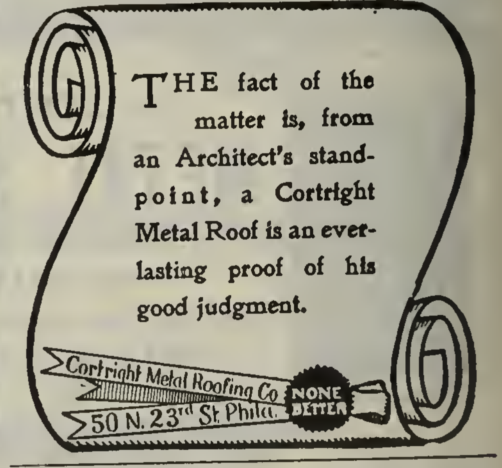

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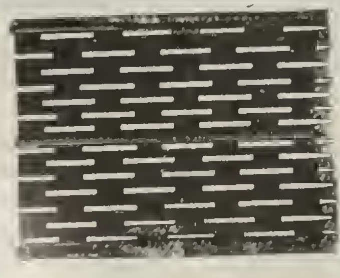

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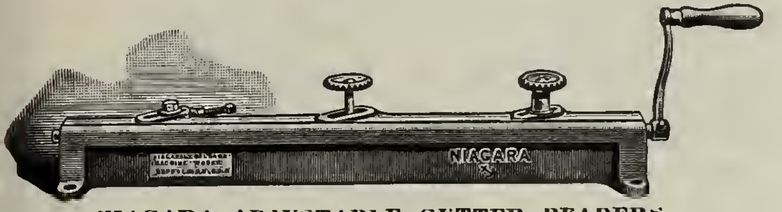
Suitable for Rods of Various Diameters.



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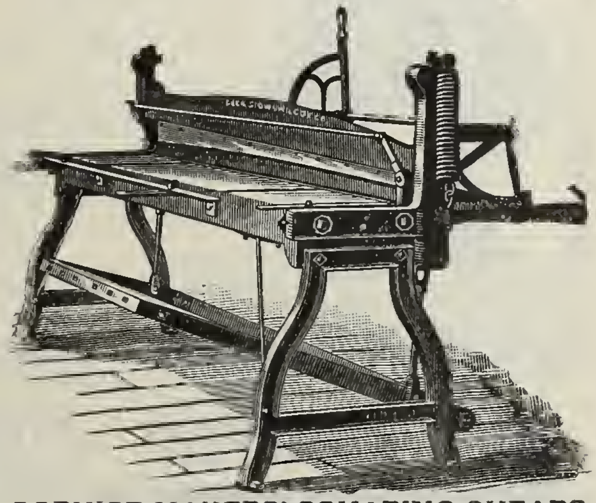

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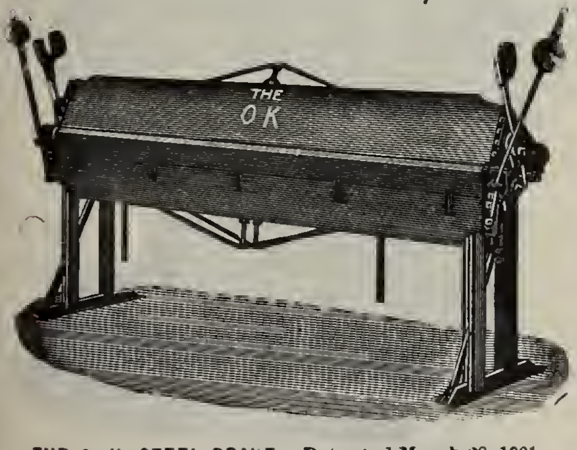

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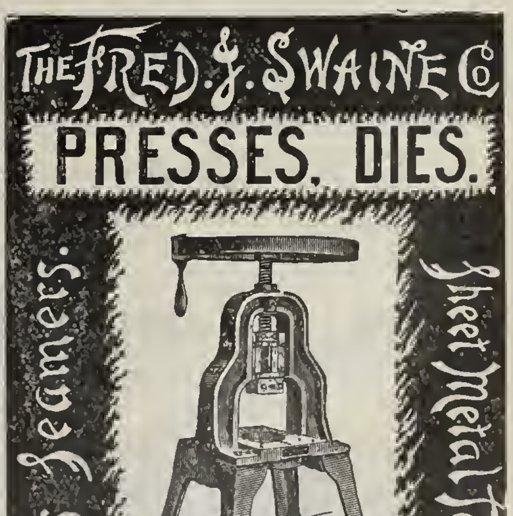

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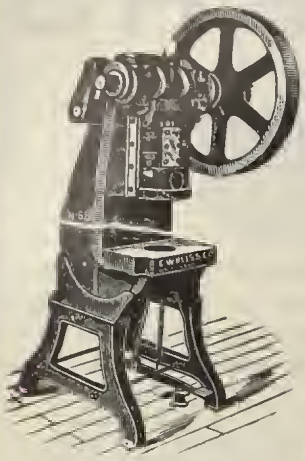

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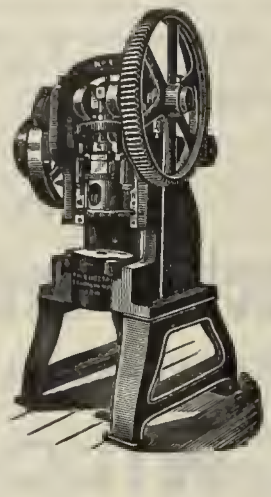

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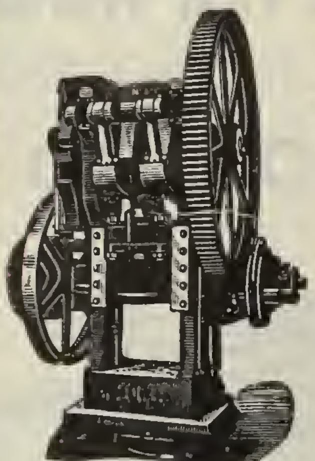

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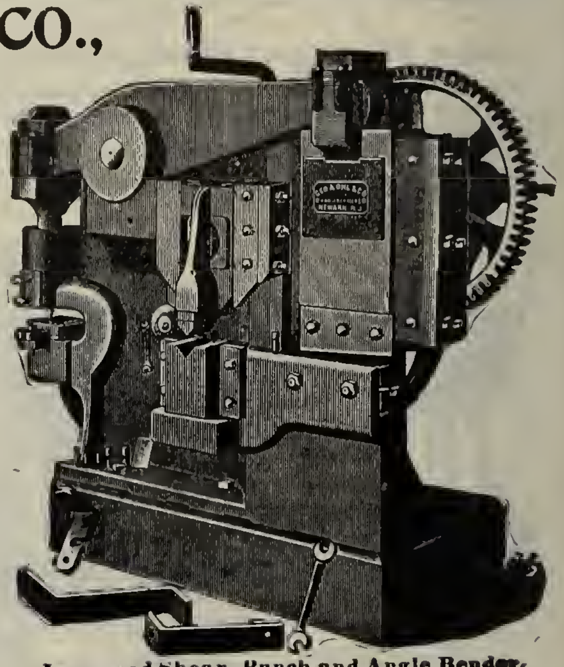

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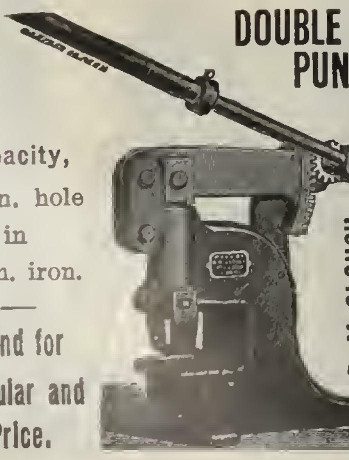

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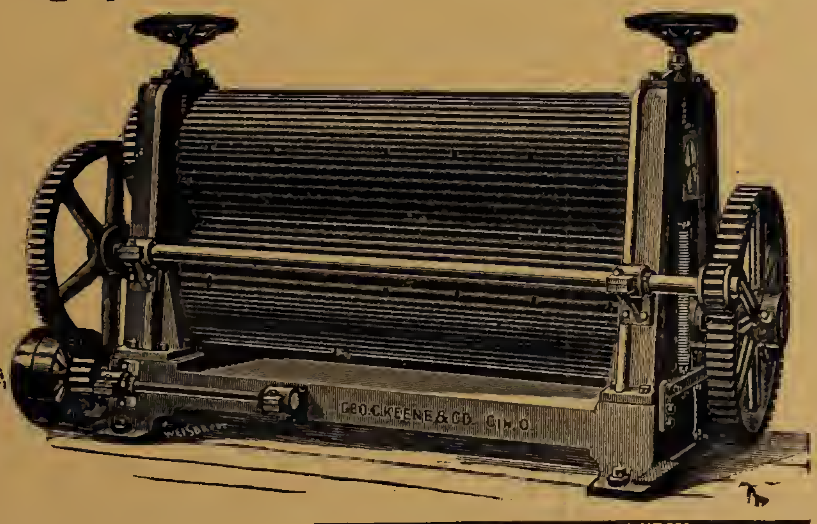
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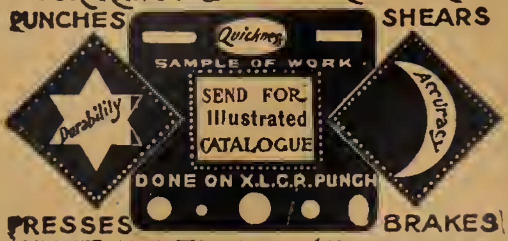

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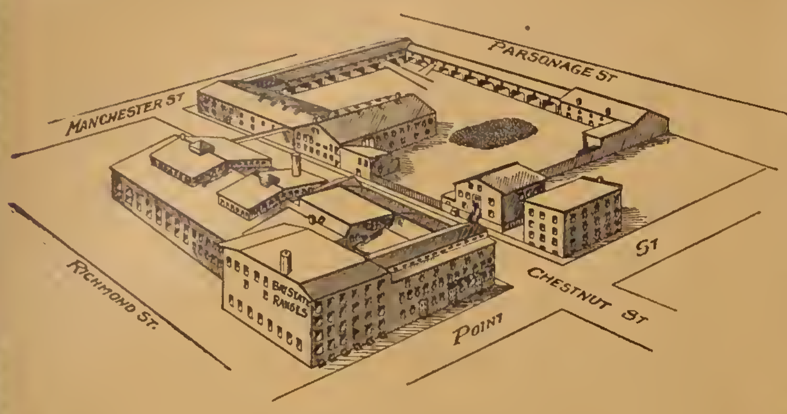

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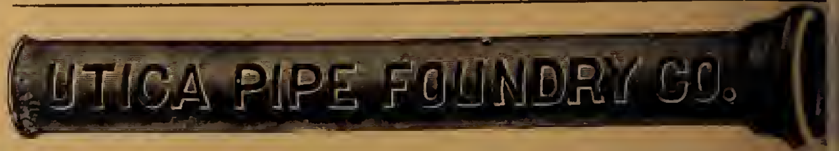
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Index to Reading Matter, Page 56. Index to Advertisements, Pages 58 - 60

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A WEEKLY JOURNAL OF THE STOVE, ROOFING, CORNICE, TIN, PLUMBING AND HEATING TRADES.

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LVII.
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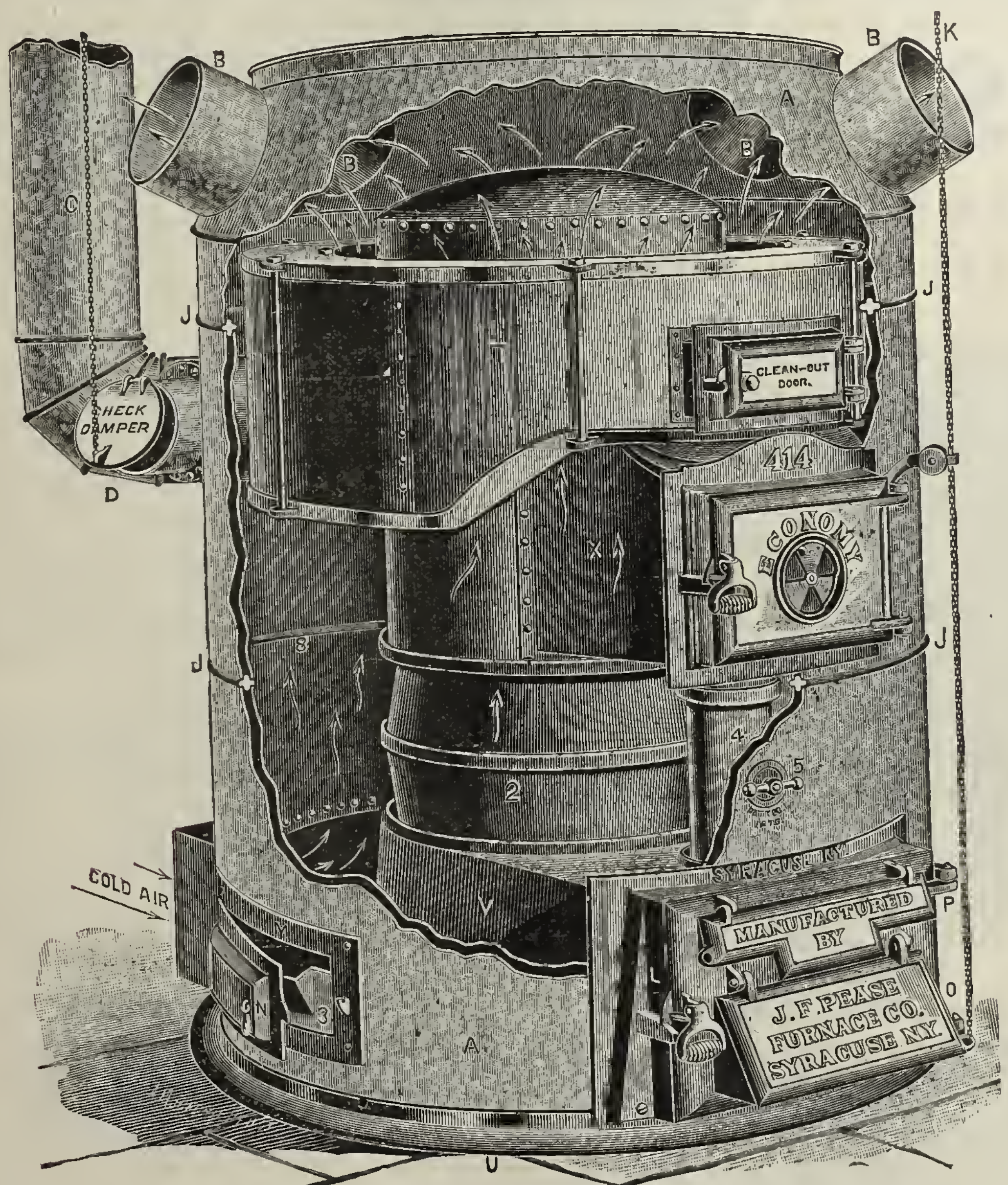

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The Most Desirable Range on the Market at Popular Prices.

Full-sized cabinet construction. This Range is durable in all parts which are su to wear and excessive use. Its general construction is the best, and it is most econo in the use of fuel.

The new PORTABLE reservoir—which has flush top, is made of cold-rolled ye metal and fits all sizes—admits of a Range being changed in a moment from SQU to RESERVOIR construction, there being no bolts to put in or remove. There are no around to fill up or clean. Reservoir holds 10 gallons of water and heats FASTER any other construction. The heat of the oven is not affected by the reservoir, and Range is ready for baking at all times.

Mounted with Wellsville Polished Steel, has square steel oven with bottom brac prevent warping, and is a very quick and perfect baker. The oven-top is protected cast-iron plate; the oven racks, the back of oven and inside of oven door, as well a inside of all flues, are ALUMINIZED, producing a bright surface, always clean, and vents rusting. Folding Teapot-Holders on high shelf and high closet. All parts which subjected to intense heat are protected with ASBESTOS, which not only protects all of the sheet steel but produces a UNIFORM temperature of heat.

This Range has end combination feed or broiling door, as well as end draft regist poking door. VENTILATED oven, effective ash-guards, large steel ash-pan, large cleaning door, end shelf on square Range, rapid-heating water-back. Very attra high shelf and high closet, all made of Wellsville Polished Steel, same as body of Ra nickeled trimmings. A three-ring cover sent free with each Range.

Made for hard coal or wood under the name of "SENSATION GARLAND," whi the same in appearance and general construction, only the fire-box being changed to duce the best results from hard coal.

Dealers desiring to lead the market should order sample of this Range at once so t may examine it carefully and place their order early to secure their supply, as we pre a very large sale for the "Satisfaction Garland, Jr."

GARLAND
STOVES
AND
RANGES
"The World's Best"

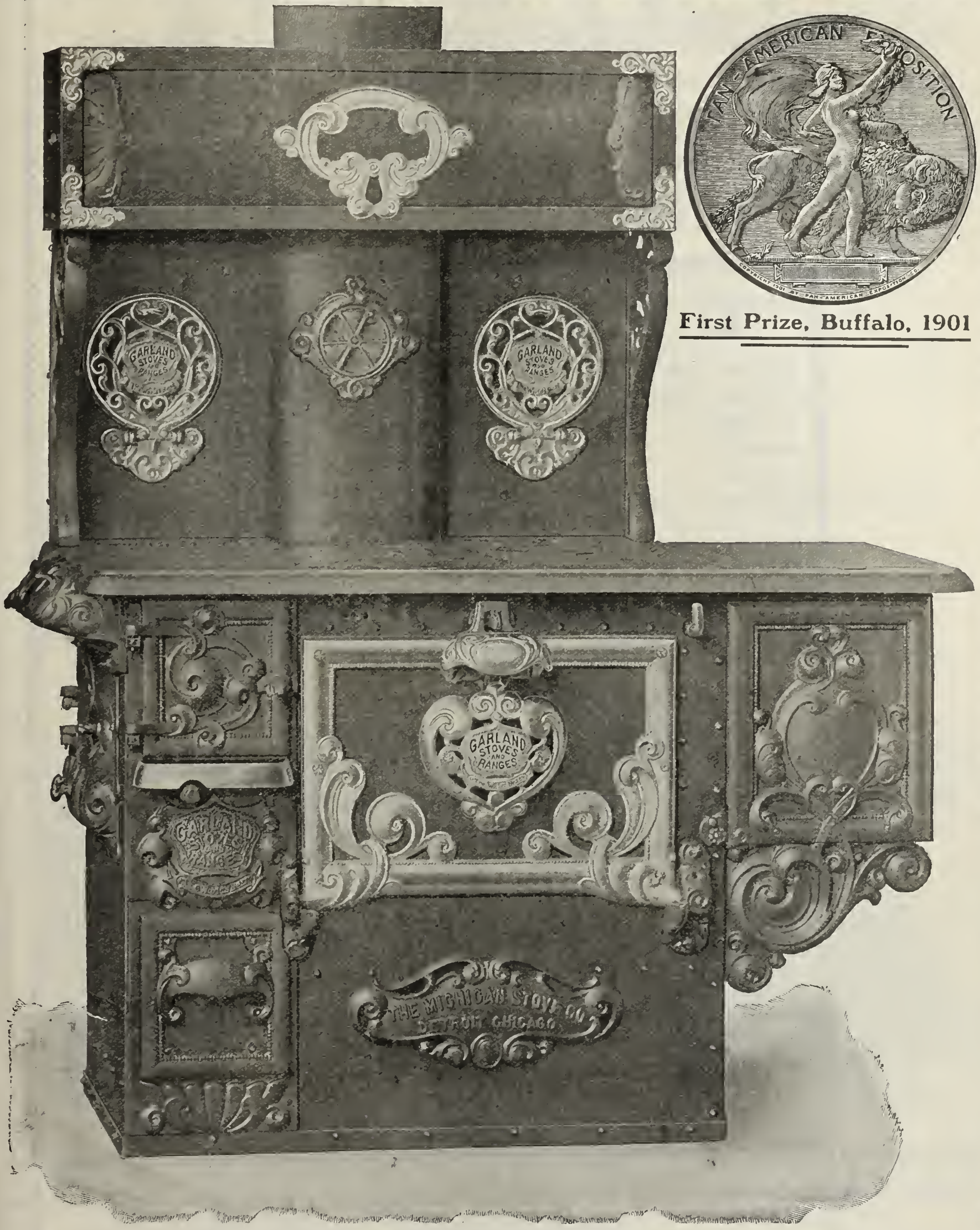
•••••••••••••••••

The Michiga

Largest Makers of

DETROIT.

First Prize, Buffalo, 1901


GARLAND STOVES AND RANGES
GARLAND STOVES AND RANGES
GARLAND STOVES AND RANGES
GARLAND STOVES AND RANGES
THE MICHIGAN STOVE CO
DETROIT CHICAGO

Moderate in Price, Satisfactory in Construction,
Durability and Convenience.

n Stove Company,

toves and Ranges in the World,

CHICAGO.

One of the "NEW SERIES" Acorn Newspaper Advertisements. There is also a "NEW SERIES" of Steel and Cast Specialties for 1902, ***all Acornly attractive.*** Please ask about them.

"U.S. STEEL"

IF ITS CASH CAPITAL WERE FIFTEEN HUNDRED MILLION DOLLARS WITH A NEW ISSUE TO FOLLOW

could buy every acre of land in the great State of Illinois at Fifty Dollars per acre! But with all its capital it could not purchase a

POOR ACORN STOVE

because "Acorns" are not built that way.

ACORN STEEL STOVES

and Ranges are made from best grades of U.S. Steel.

ACORN CAST STOVES

and Ranges are made from best grades of Pig Iron. No scrap iron is used.

THE STANDARD FOR EXCELLENCE SINCE 1830

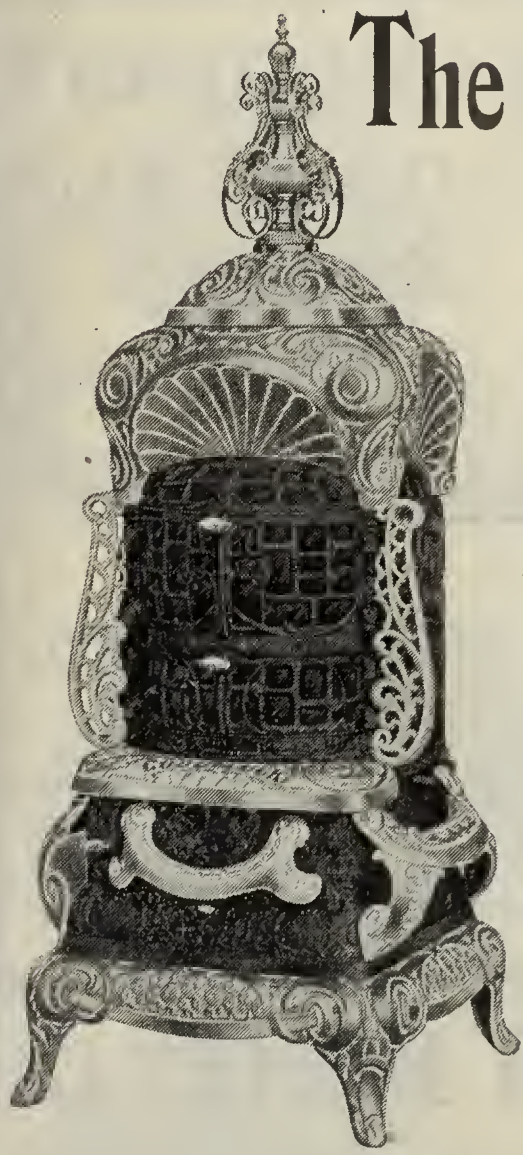
"ACORN" NEWSPAPER AD. No. 413
7 inch Double Column. Free to Acorn merchants.

Rathbone, Sard & Company

"The Oldest American Stove Makers"

Eastern Foundries,
ALBANY, NEW YORK

Western Foundries,
AURORA, ILLINOIS



The Good Luck Base Burner.

"ONE OF THE FINEST."
NO BETTER AT ANY PRICE.
FIVE FLUES—three for radiation, two for circulation or double heating.

Ransom Duplex Grate—"Lift Out" Fire Pot.
Removable Nickel—Highly Polished.
Smooth Castings Perfectly Fitted.
The Cut Shows it is Good Looking.
We Guarantee the Operation and Finish.
It is Full Size and Full Weight.
It is Medium Priced.
You ask, "How can you give so much for the money?"
We answer, "It is Made in Pittsburgh."

PITTSBURGH STOVE & RANGE CO.,
PITTSBURGH, PA.

SEND FOR PRICES.

MODEL

STOVES and RANGES
Take the lead all over the United States.
MANUFACTURED BY
The Home Stove Company,
Indianapolis, Ind.

MODEL LEADER
STEEL COOK
EXCELS THEM ALL

REFRIGERATORS, BLUE FLAME OIL STOVES, GASOLINE STOVES.	LARGEST JOBBERS in NEW ENGLAND.	GAS RANGES, FURNACES, STOVES, RANGES AND REPAIRS.

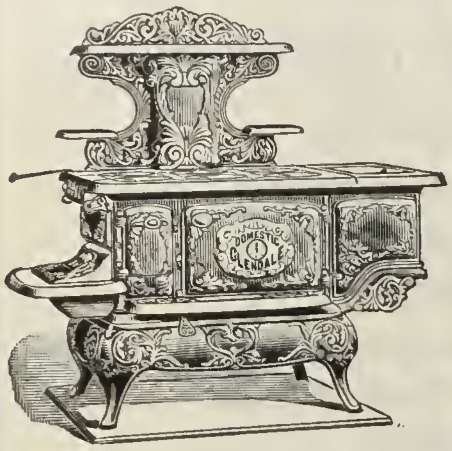
HENRY N. CLARK CO., 56 and 58 UNION ST., **Boston, Mass.**

BRAND STOVE CO.

STOVES, RANGES and FURNACES.
SEND FOR CATALOG.
MILWAUKEE, WIS.

GLENDALE

Stoves and Ranges



Manufactured by

SOMERSET STOVE FOUNDRY CO.,

SOMERSET, MASS.

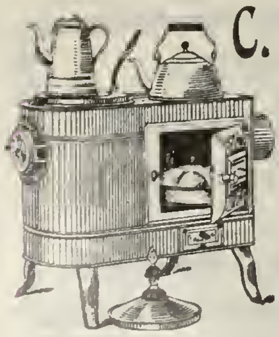
Send for a Sample.

No need to fear competition when you're agent for the

HOUSEHOLD RANGES

We know they're the best ranges built to-day; they're the best sellers—and you needn't be afraid of guaranteeing them absolutely—in fact we want you to, and we'll stand back of you every time. If you want to sell Household Ranges write us to-day.

WHITE, WARNER & CO.
Taunton, Mass.



C. H. Cosby's

PATENT AIR TIGHT BAKER AND HEATER.

Agents wanted in every town and city. Write for particulars.

C. H. Cosby,
423 W. Broad,
Richmond, Va.

SCRANTON CORUNDUM & EMERY WHEEL CO.

1311-1315 Capouse Avenue, SCRANTON, PA.

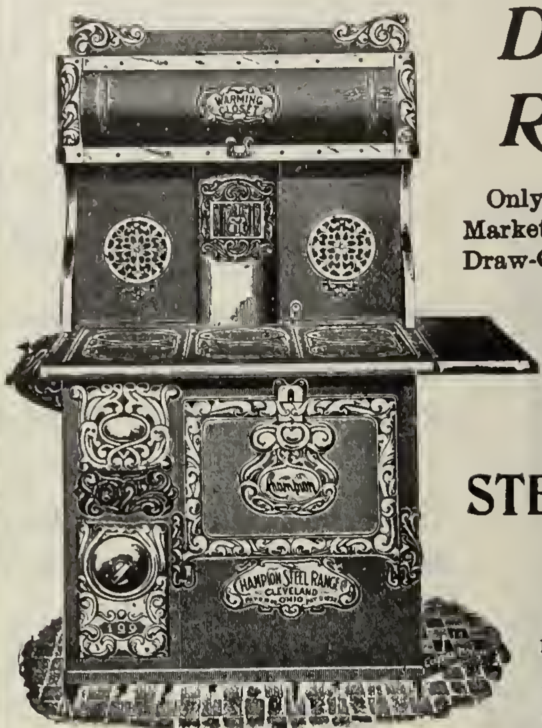
Write for Catalogue.

OUR "BLACK DIAMOND" artificial abrasive wheels are especially adapted for **The Stove Trade**

THEY ARE THE BEST

Champion and Marquart

Double Flue Ranges.



Only Double Flue Ranges in the Market. The Greatest Fuel Saver. Draw-Out Grate.

Handsomely Finished Throughout. Prices Within Reach of all.

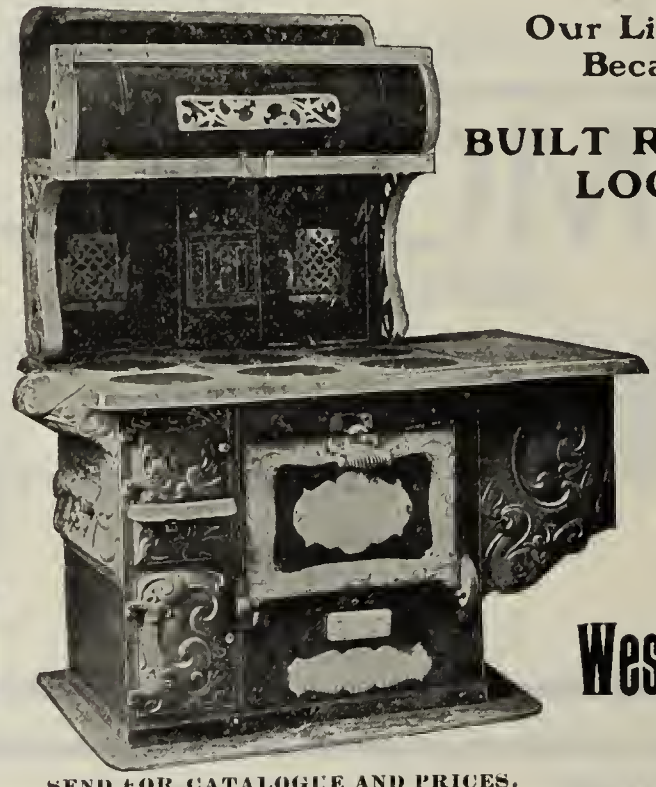
CHAMPION STEEL RANGE CO.,

CLEVELAND, O.

We are represented by the following houses:

Lee-Glass-Andreesen Hdw. Co., Omaha, Neb.
James Graham & Son, San Francisco, Cal.
Richards & Conover Hdw. Co., Kansas City.
Michigan Distributing Co., Lansing, Mich.
Chicago Stove and Range Co., Chicago, Ill.
J. M. Litchfield, New York, N. Y.
Kettlesen & Degetan, Chihuahua, Mex.
Moore-Bandley Hdw. Co., Birmingham, Ala.
Jacob Retterer, Chicago, Ill.
Corhett, Failing and Robertson, Portland, Ore.
Palmer Hdw. Co., Savannah, Ga.

"PLEASANT HOME" STEEL RANGES



Our Line Meets Favor Because they are

BUILT RIGHT
LOOK RIGHT
COOK RIGHT

Dealers will find it to their advantage to look into our claims.

SEND FOR CATALOGUE AND PRICES.

Western Stove Works

Peoria, Illinois

I Will Give the Public the Benefit.

Having completed patterns for my 1902 line, I will close out my last year's pattern of the celebrated

400 LB. WILLARD STEEL RANGE for $15.00.

This is Less than 4c. per pound.

They have six 8 inch lids. Oven, 17 x 21 x 12. Top Cooking Surface, 30 x 36. Large Warming Closet. 15 gallon Reservoir. Duplex Grate, Burns Wood or Coal. Lined throughout with Asbestos.

EVERY ONE GUARANTEED. BUY NOW AND SAVE 100%. Write for Free Descriptive Circular and Testimonials. "FIRST COME—FIRST SERVED."

WM. C. WILLARD,
619-621 N. 4th St., - - St. Louis, Mo.

OUR

CATALOGUE,

SHOWING

GAS RANGES
CAST RANGES
STEEL RANGES
STEEL COOKS
HOT PLATES
CAST and STEEL HEATERS

WILL BE FURNISHED FOR THE ASKING BY

Enterprise Stove Co., VINCENNES, IND.

STAR STOVES AND RANGES GUARANTEED. ENTERPRISE STOVE CO. VINCENNES, IND.

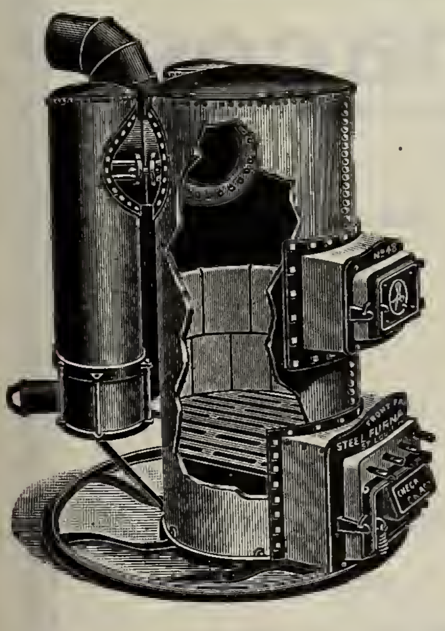
The Robinson Tubular Warm Air Furnaces

give universal satisfaction wherever used.

They are up-to-date in every respect and have many special features not found in other furnaces.

WRITE FOR CATALOG.

ROBINSON FURNACE CO., Chicago.



Front Rank Hot Air Furnaces

are built on vertical lines; air comes in direct contact with entire heating surface.

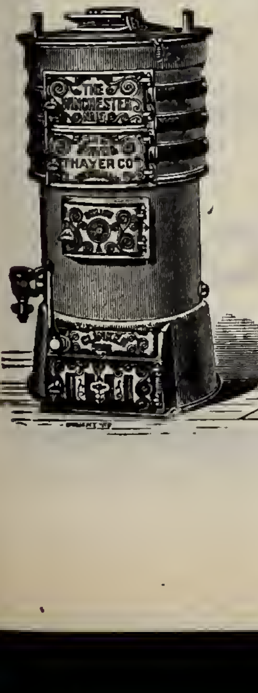
The Front Rank Fire Chamber is one solid sheet of closely riveted steel; being lined above the fire lines with genuine fire clay tiling it is the most durable made.

The radiators are very large and have an unusual area of heating surface in comparison with the size of fire pot.

These furnaces burn hard or soft coal or coke. We also make wood burning furnaces.

Send for our catalogue, it will give you a better idea of what we make.

FRONT RANK STEEL FURNACE CO.,
2301 to 2309 Lucas Ave., St. Louis, Mo.



WINCHESTER

Good company makes the way seem shorter. To the steamfitter it is a pleasure to travel in company with a "WINCHESTER" heater. His steam or water jobs are places it is a pleasure to visit, and they lead to more business. The "WINCHESTER" is for sale by Smith & Thayer Company, Boston, Mass.; 106 Beekman Street, New York.

HEATER.

OUR POSITION

The familiar story about the shield at the roadside and the two knights errant approaching it from opposite sides and exclaiming, the one: "It is silver!" and the other: "It is gold!" reminds one of Heating Apparatus.

We Manufacture

Hot Water Heaters,

Low Pressure Steam Boilers,

Warm Air Furnaces.

The advocates of each line swear by its merits. Perhaps, like the knights of the story, they are right.

Like a man who fixed a place for his neighbor's hens to lay, we enter no protest.

We manufacture all kinds of heating apparatus and we are in a *POSITION* to supply you with the most comprehensive line of each kind in the world.

Catalogues and Prices on Application.

The BOYNTON FURNACE CO.,

NEW YORK, CHICAGO.

THE H. B. SMITH CO.,

WESTFIELD, MASS., U. S. A.

Catalogue furnished only upon application to

Heating Contractors, Engineers and Architects

92 Pages. Size 9 x 12 Inches.

COTTAGE BOILERS.

STEAM BOILERS (8 SIZES), 550 SQ. FT. RADIATION SUPPLIED.
WATER BOILERS (8 SIZES), 900 SQ. FT. RADIATION SUPPLIED.

PACIFIC COAST AGENTS

HOLBROOK, MERRILL & STETSON,

SAN FRANCISCO, CAL.

EUROPEAN AGENTS

AUG. EGGERS,

BREMEN AND NEW YORK CITY.

SALESROOMS :

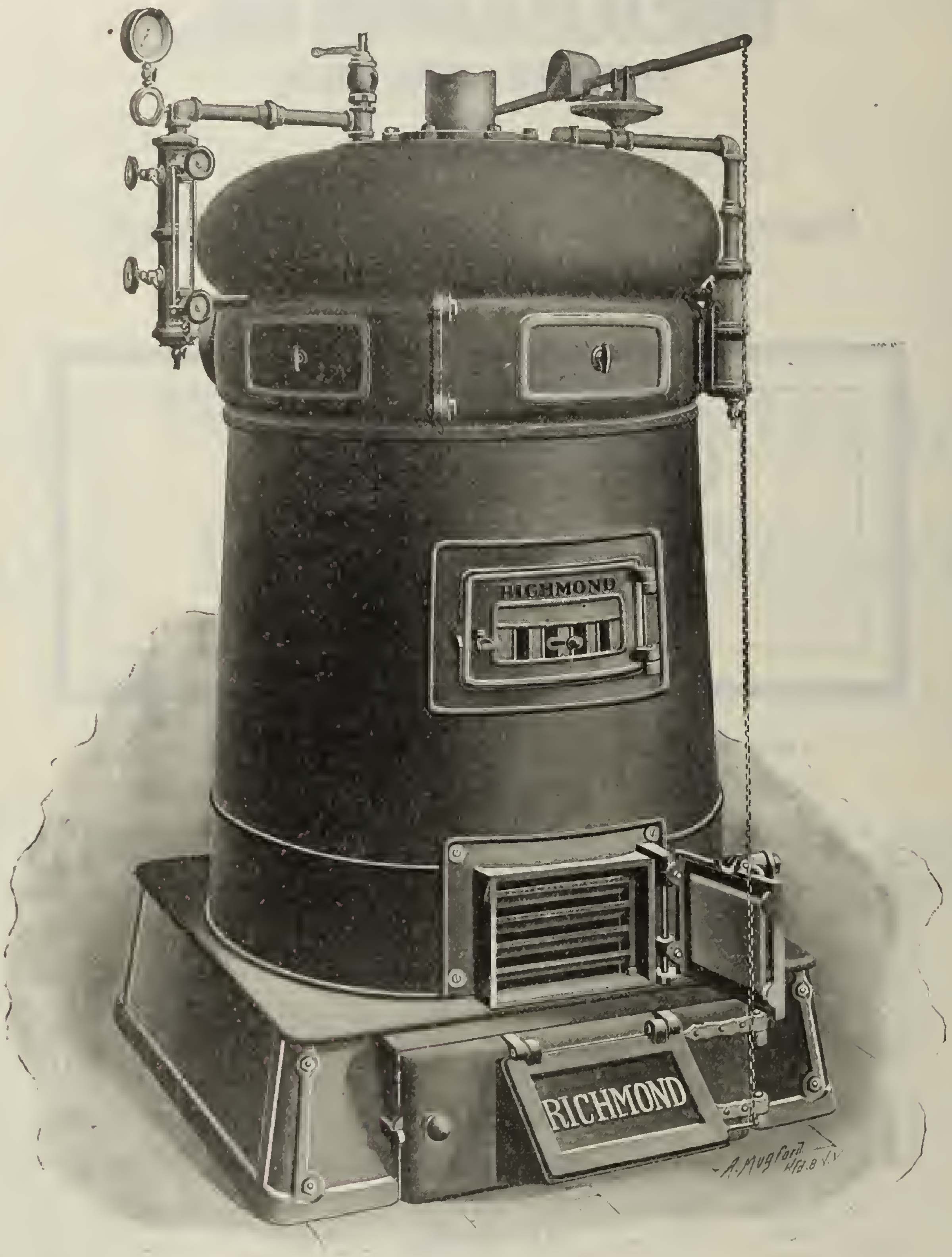
THE H. B. SMITH CO.,

133 CENTRE STREET,
NEW YORK.

510 ARCH STREET,
PHILADELPHIA.

RICHMOND

Heaters that HEAT.

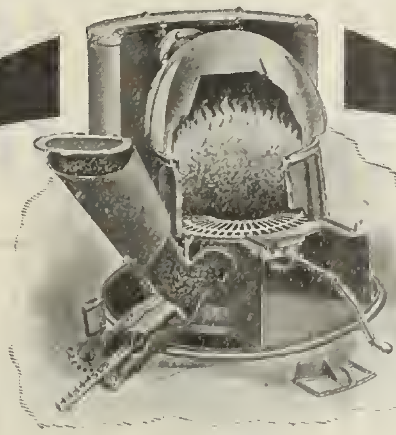


Get in line and be up to date in the boilers you buy as you are in other things.

WRITE TO-DAY FOR CATALOGUE X,
And learn something about our New Heaters that HEAT.

The Richmond Stove Company, NORWICH, CONN.

NEW YORK, 737-38 Park Row Bldg.
PHILADELPHIA, 18-24 S. 7th St.
PITTSBURG, 210 Ferguson Bldg.
CHICAGO, Chicago Heater & Supply Co.
ST. LOUIS, Rumsey & Sikemeier.



PATENTED.

There is a point about the

Peck-Williamson Underfeed Furnace

which your customer will appreciate all the way through. It is the eliminating of smoke and gases and dust which usually attend the "firing up time" of the ordinary furnace. Sometimes this nuisance is very noticeable—even visible. Sometimes it isn't. But it is there just the same dirtying up the whole house.

In the **Peck-Williamson Underfeed Furnace** a pull or two on the lever forces the new coal up to the fire.

As the new coal ignites its volatile gases and free carbon are drawn up through the upper burning coal and thoroughly consumed. There is no other outlet.

This is the very simple and logical reason why the **Peck-Williamson Underfeed Furnace** is a clean furnace, and why it is practically smokeless, and why it utilizes every bit of the heat in the coal.

If you should tell a prospective buyer these things, what effect would they have? He is after the furnace that he believes will consume the least coal and give the most heat.

You can show him as clearly as two and two are four that the **Peck-Williamson Underfeed Furnace** will do things no other furnace on earth is able to do. They are the very things every furnace buyer is after.

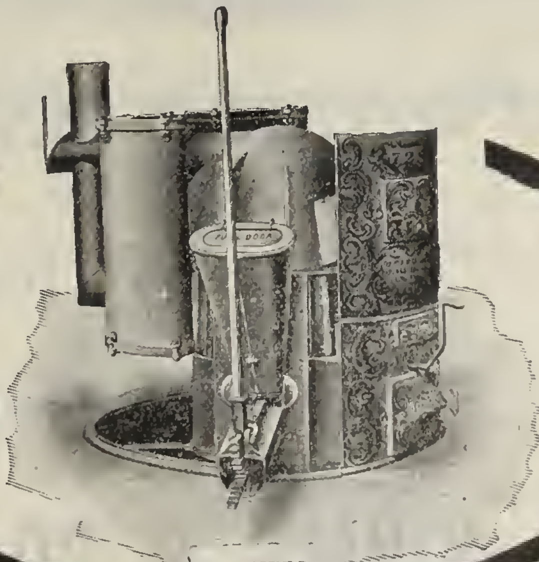
If you sell just one of these furnaces, it will open the way for you to usurp the furnace trade of your community.

There are some trite truths in our new booklet, which you may have for the mere asking.

Our Laundry Dryer is a household necessity. Drys clothes sun or storm in 20 minutes. The women want them.

The Peck-Williamson Company,

Cincinnati, = = = = = = = Ohio.



PATENTED

HIGH GRADE HEATERS

Some Dealers Look to the profit they make on the sale of a single furnace, and if a cheap furnace is used the profit looks large when the contract

Is Made

When this cheap furnace fails to heat, and gives out in the middle of winter, the dealer is obliged to alter and readjust the setting, secure repairs for his furnace, and in the end the entire profit

Is Wiped Out

and great disgust follows to both the purchaser and the dealer.

OTHER DEALERS INSIST

on using

Good MATERIALS
WORKMANSHIP
FURNACES.

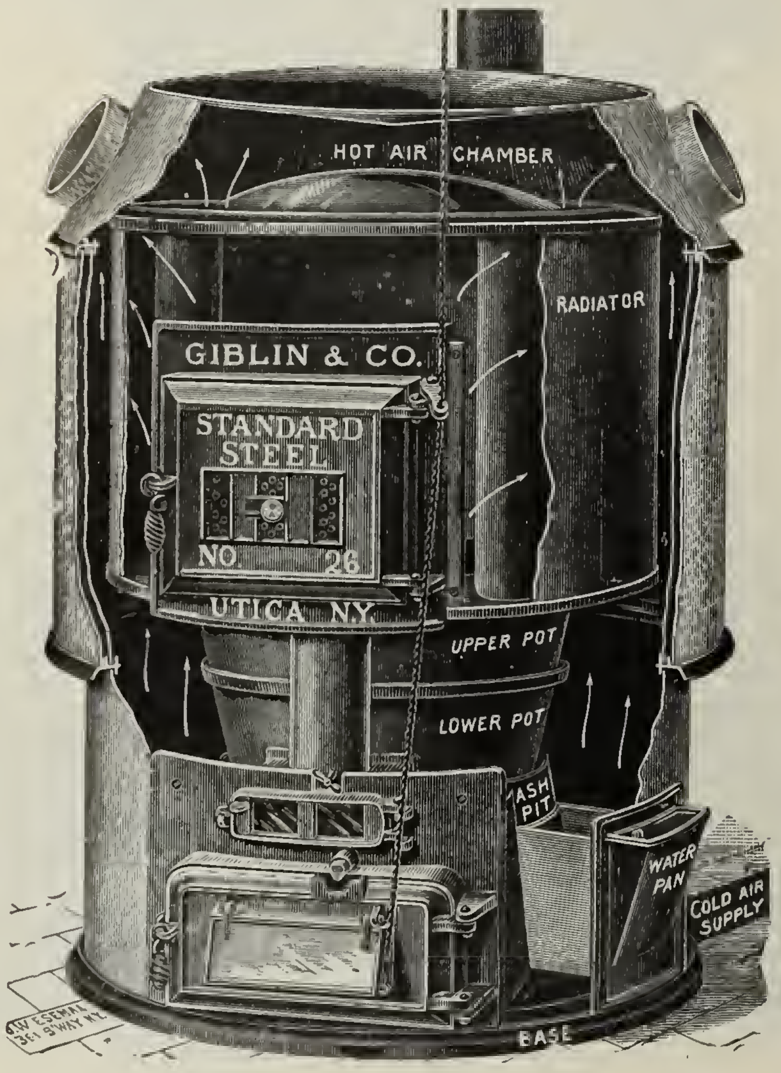
The result of such choice is satisfactory heating, pleasant feelings between the purchaser and the dealer, and the

WARMEST RECOMMENDATION

of the furnace and the dealer.

A GOOD BUSINESS REPUTATION

is obtained, and when good work is wanted this dealer is sought out and fair prices paid for his work.



The Basis

of all heating is a

Good Furnace,

one that is
SIMPLE in operation,
ECONOMICAL in fuel
and
LONG-LIVED
without the need of repairs.

The furnace shown here has all these merits, and the actual use of

Many Thousands

of these heaters has demonstrated its superiority.

FURNACE DEALERS

who are trying to establish a

Good Furnace Business

should place themselves in communication with us, obtain our catalogue, see the line of heaters we make and get in position to do business on a good basis for the balance of the year 1902.

Our Prices are reasonable, and our treatment of our customers is

More Reasonable.

GIBLIN & CO., Utica, N. Y.

Royal Heaters.

HART & CROUSE CO.,

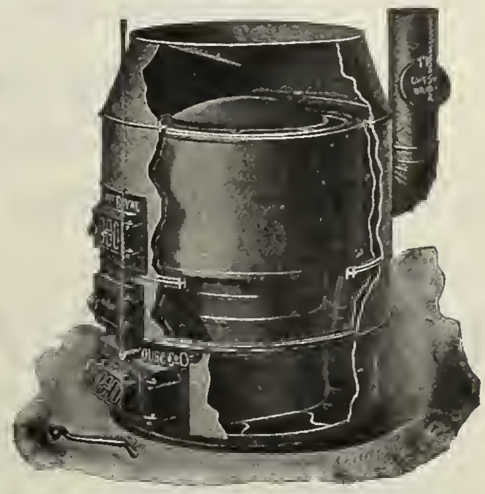
235 Water St.,
New York.

78 Lafayette St.,
UTICA, N. Y.

79 Lake St.,
Chicago.

The Leading Line of Heating Apparatus.

HOT WATER,
STEAM,
HOT AIR.



The Stanton Seamless Heater,

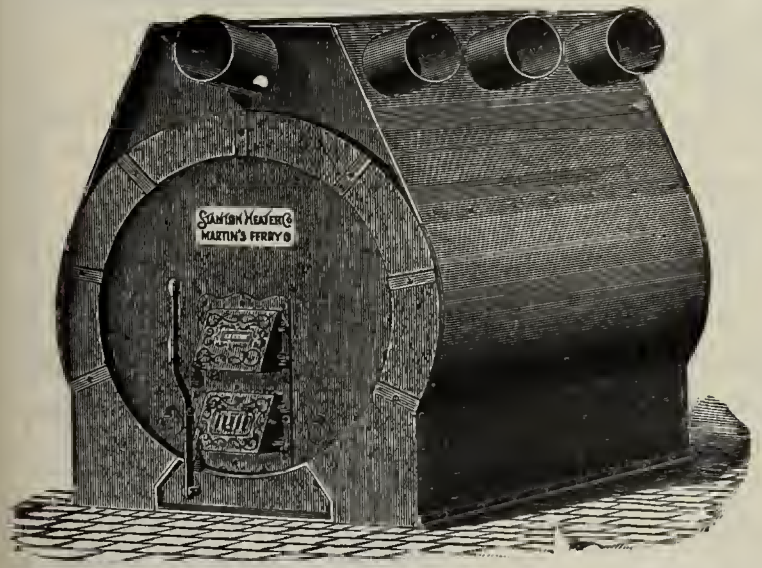
PORTABLE CASED.

The cut herewith represents the ***Stanton Seamless Heater complete,*** with portable casing. The inside Casing Sheet is made of ***No. 24 cold rolled sheet steel.*** The outside casing is made of ***No. 24 Aluminum-coated sheet steel,*** which is anti-rust and will stand a much higher degree of heat than it will ever be subjected to before tarnishing. Heavy asbestos paper is placed between inside and outside casing, which prevents heat from radiating into cellar. ***This coating will not peel off,*** but remain pretty and white.

SEND FOR CATALOGUE.

THE STANTON HEATER CO.,
Martin's Ferry, Ohio.

See Our Advertisement Next Week.


Stanton Heater Co.
Martin's Ferry O.

Emperor Furnaces

FOR WOOD.

Simple, Safe, Durable. Economical in Fuel.

The Best and Cheapest Line of Wood Furnaces. . . .
Furnished for either Brick or Galvanized Iron Casing

SEND FOR CATALOGUE.

Bergstrom Bros. Co.

NEENAH, WIS.

SUPERIOR FURNACES

UTICA HEATERS

THEY
STAND
UP!

DURABILITY.

SUPERIOR Furnaces and UTICA Heaters, with ordinary care, will outlive any other furnaces. If you knew how much care we exercise in maintaining the wonderful iron mixture and the high quality of the steel sheets that enter into the construction of SUPERIOR Furnaces and UTICA Heaters, you would not wonder why this line is popularly regarded as "The Best!"

Where other furnaces are weakest, SUPERIOR Furnaces and UTICA Heaters are strongest.

Send for Catalogue and Quotations.

UTICA HEATER COMPANY, Manufacturers, UTICA, N.Y.

CHICAGO HEATER & SUPPLY CO.,
54 Dearborn Street, CHICAGO, ILL.

The "HOME WINTHROP" range has a **dust flue** which takes **all** the dust up chimney even if the draft slide is open when you shake the grate.

The "HOME WINTHROP" heats **ALL of FIVE SIDES OF THE OVEN.**

Do you sell a range that is better than others, and if so, how does it differ from them except in ornamentation and name on Oven Door?

DIGHTON FURNACE CO., Taunton, Mass.

For a swell job

You ought to know our line—many a dealer loses an opportunity to make a good profit because he knows only heating stoves and furnaces.

We can post you concerning steam and hot water heating, so you can get a share of what is due you.

KEWANEE BOILER COMPANY

KEWANEE, ILLINOIS.

STARTING RINGS For All Kinds of BLUE FLAME STOVES.

Small size, 40c. per doz. Medium size, 55c. per doz. Large size, 75c. per doz.

In ordering mention diameter of rings and name of stove.

THE S. M. HOWES CO., 40, 42, 44, 46 Union Street, Boston, Mass.

The Financial Argument.

Some of the heaters on the market are not worth their price because better value can be secured for the same money. That's the great argument in behalf of

"GURNEY" HEATERS,

BRIGHT IDEA DORIC and 400 SERIES.

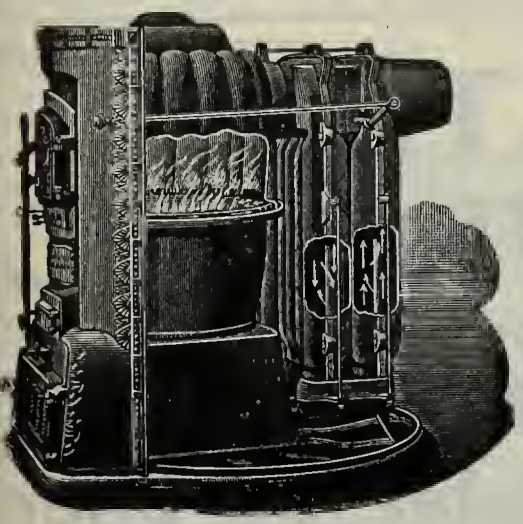
They furnish decidedly greater value yet they cost no more than ordinary heaters. Not only do we say so but a host of testimonials from present users corroborate this statement.

That one fact alone ought to be sufficient to induce every dealer who wants the fullest measure of business to handle "Gurney's." If you are in that class we shall expect to hear from you relative to an agency. Latest trade catalogue for the asking.

Gurney Heater Mfg. Co.,

74 Franklin St., Boston. *111 Fifth Ave., New York City.*

Western Selling Agents, James B. Clow & Sons, 358 Franklin St., Chicago, Ill.



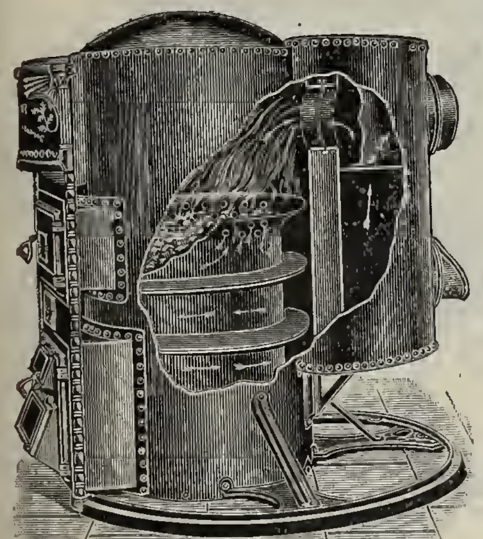
MR. DEALER

The BENGAL FURNACE will make it warm for your competitor. We issue a Booklet that should be read by every Furnaceman.

Sent free on request.

EASTERN SELLING AGENTS:
GURNEY & CO.,
Washington, Hanover and Elm Streets, Boston, Mass.

FLOYD, WELLS & CO., Royersford, Pa.
NEW YORK OFFICE, 210 WATER ST., R. W. HILLMAN, Manager.

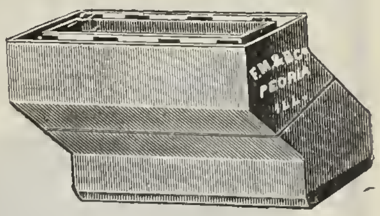


WEIR ALL STEEL GAS AND SOOT CONSUMING FURNACE.

THE HEAVIEST STEEL FURNACE MADE.

Absolutely gas and dust tight. A great heat-producer but a fuel saver.

MANUFACTURED BY
THE MEYER FURNACE CO.,
1300-1304 S. Washington St.,
SEND FOR CATALOGUE. PEORIA, ILLS.



"The Handy Furnace Pipe."

MADE WITH A VIEW OF BEING SAFE.

The saving of labor in putting it up really makes it the cheapest hot air pipe on the market.

MANUFACTURED BY
F. MEYER & BRO. CO.,
SEND FOR CATALOGUE. PEORIA, ILLS.

STOVE REPAIRS

Bought from us entitle the purchaser to a 1000 Mile Book FREE on any railroad.

HAVE YOU RECEIVED ONE OF THEM?
WRITE FOR PARTICULARS.

HEADQUARTERS FOR

WICK RINGS

For all Blue Flame Oil Stoves made—at startling low prices.

ELECTRIC BLUE FLAME COOKS

Are what you want for Summer trade.

CHAS. C. HEATH & CO., - - Philadelphia and Baltimore.

WHY SELL THATCHER FURNACES?

First Reason:

Because they sell Readily.

People have been buying "Thatcher" furnaces for 52 years until "Thatcher" has become a household synonym for the best furnace. This is the finest sort of advertising for the dealer, and makes selling easy.
Watch for our next reason.

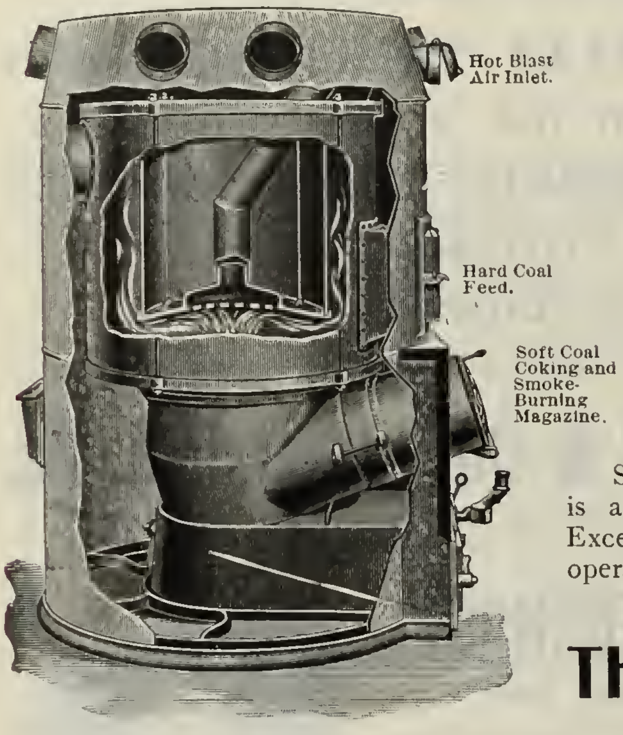
WRITE FOR CATALOGUE.

THATCHER FURNACE CO.,

Established 1850.

Warm Air Furnaces, Ranges, Steam and Hot Water Heaters.

Works: Newark, N. J. 240 Water St., New York, N. Y.



THE PATRIC FURNACE

IS A COMBINATION OF

GOOD THINGS

For the Dealer and User

Scientific and Simple in construction. The Coking and Smoke-Burning is a trade-winner. Very economical. Has an efficient Hot-Blast. Exceedingly durable. A success for 29 years. Easy to sell. Easy to operate. Easy to install.

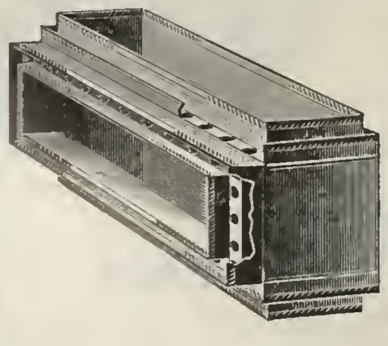
Let us send you a catalogue that tells you all about it.

THE PATRIC FURNACE COMPANY,
SPRINGFIELD, OHIO.

FURNACES

EXCELSIOR HEATING SPECIALTIES

PIPE



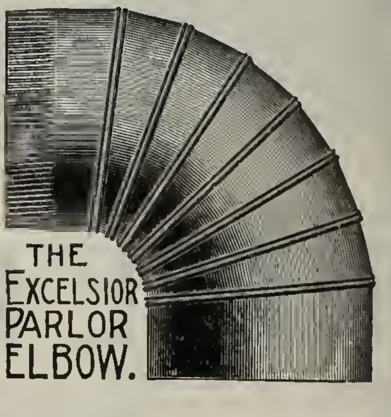
WE ARE MAKING

Very Low Prices

on our full line for present and future deliveries and solicit

Your Inquiries

Our Stove Pipe and Elbows, also Furnace Pipe are the Best made.

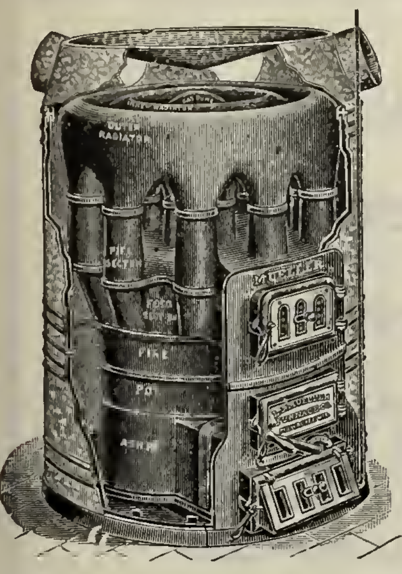


THE EXCELSIOR PARLOR ELBOW.

ELBOWS

EXCELSIOR STEEL FURNACE CO.
38-40 W. MONROE ST.-CHICAGO.

REGISTERS



All Cast Iron: Double Radiator.

WHEN WE SAY

THERE ARE

NONE EQUAL

TO THE

MUELLER

Furnaces and Boilers

We Can Substantiate Our Claim.

For Long Wood.

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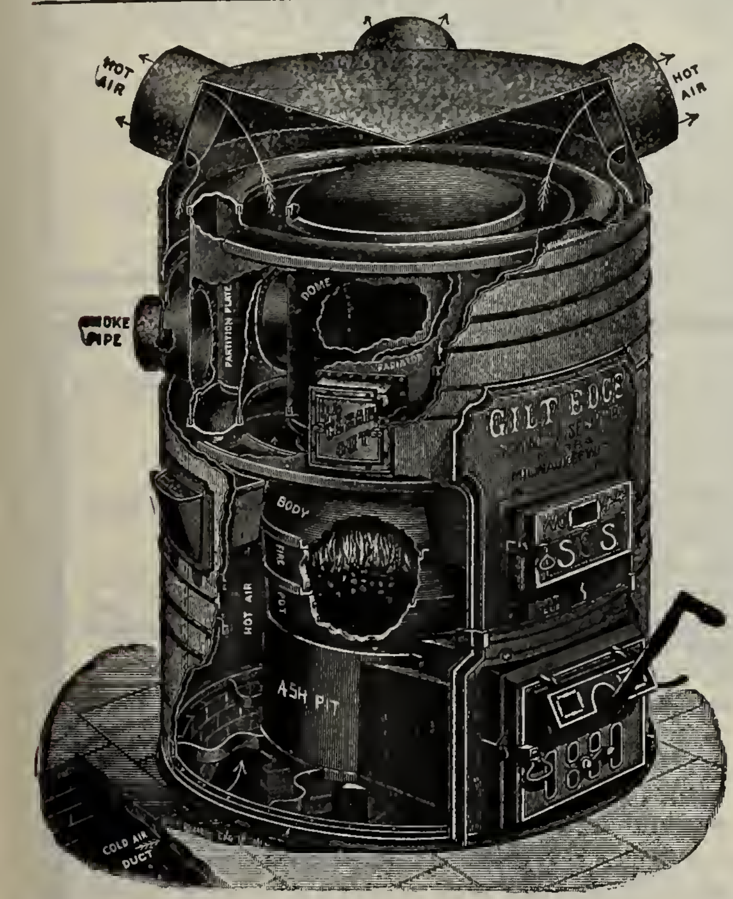

Gilt Edge Warm Air and Combination Heaters

have merits that are all their own. They are made in a large variety of styles and sizes, each adapted especially to a certain class of fuel. Our line is "gilt edge" in every sense of the word. Every furnace we make is correctly made in accordance with right principles, and the price is right. Kindly write us for catalogue.

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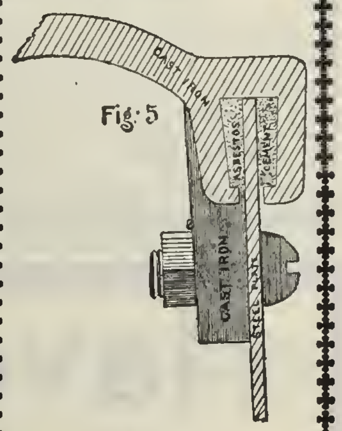

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The Keystone Joint used on Gilt Edge Furnaces is the only permanent gas-tight steel and cast iron joint on the market.

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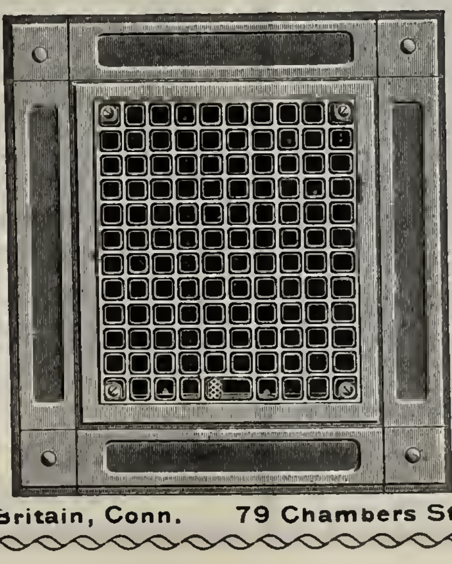

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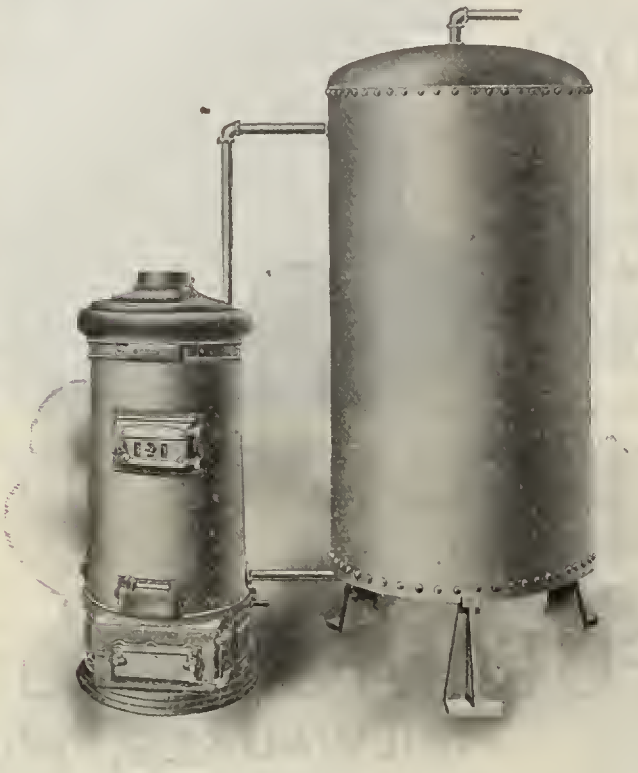

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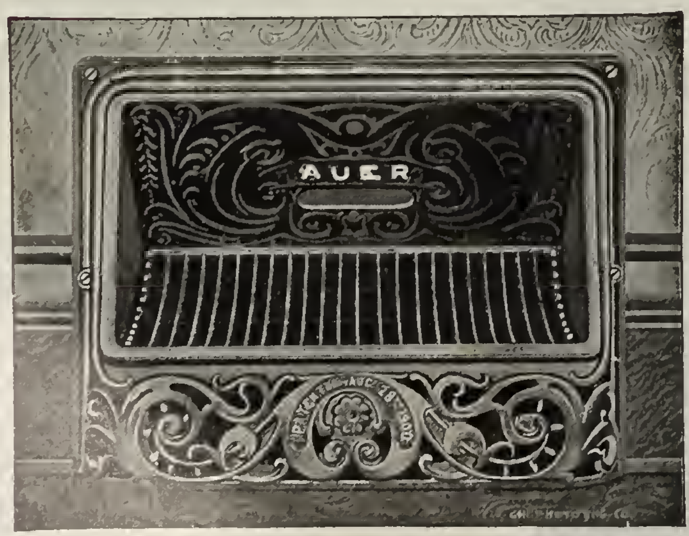

When the Register is Open the Door Reflects the Air Across the Room.

If Not

YOU SHOULD IF YOU ARE A WIDE AWAKE, LIVE, UP-TO-DATE FURNACEMAN LOOK INTO IT AT ONCE. IT

HAS THE cheerful appearance of a grate or open fire place. No soiled walls. Ventilation and safety against fire are assured through the ventilator near the floor.

FOUL AIR is taken out instead of musty cellar air into the rooms.

NO KNOBS or sharp corners projecting into the room.

NO GRILLE WORK to obstruct the air exit and accumulate dust.

THE MERITS OF THE AUER REGISTER are acknowledged by so many new concerns attempting to imitate it, which also proves that the old floor register is undesirable and out of date.

THE AUER REGISTER has been tested and used for years, therefore not an experiment.

THE AUER REGISTER has no knobs or sharp corners projecting (as is the case with others) to endanger the life or disfigurement of children.

THE AUER REGISTER has no grille front suggestive of prison bars, obstructing the air exit, accumulating dust and making the register impractical as a foot warmer, which is the case with all others.

No Cutting Carpets. No Soiled Walls.

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HOT-AIR AND COMBINATION AIR AND
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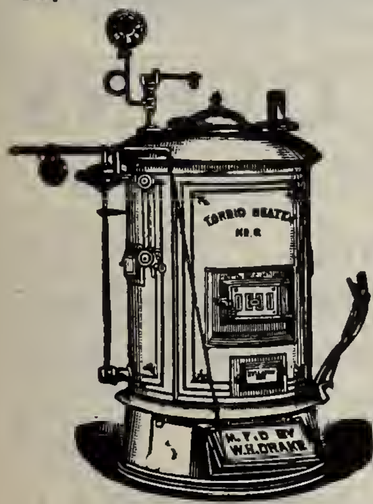

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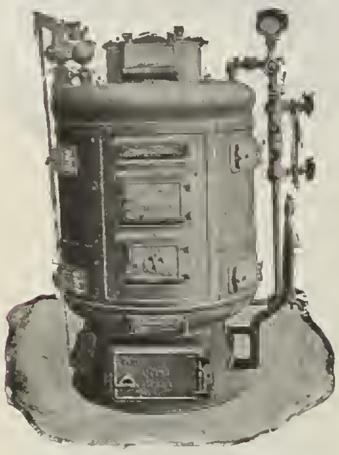

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They Fit Any Furnace.

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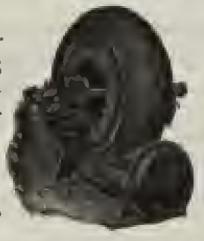

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For Hard and Soft Coal.

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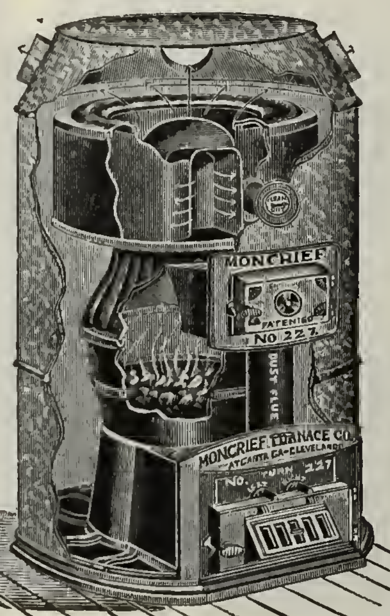

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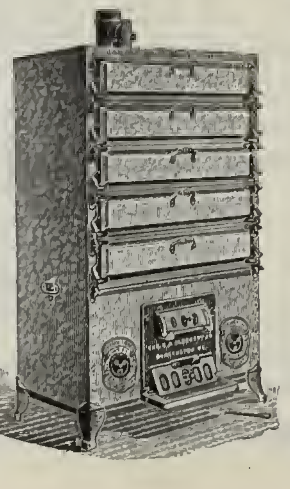

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These Boilers Sold at "Honest Ratings."

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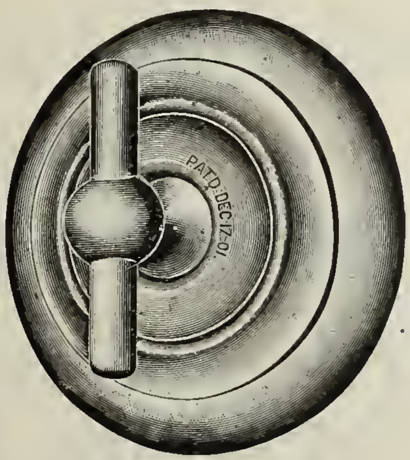

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Any size made to order in quantities.

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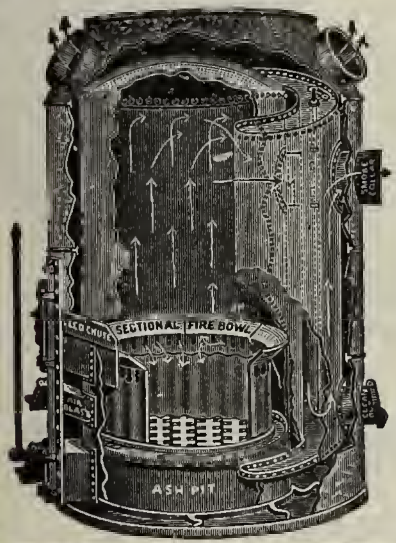

is a trade winner because it has points of merit peculiar to itself that can be found in no other steel furnace. Our new catalogue is now ready to mail and a description of our Hot Air and Hot Water Combination Furnace can be seen in it. We furnish either the cast iron lining or the fire brick at the same price. Our Wood Furnace is called a powerful heater by those who use it.

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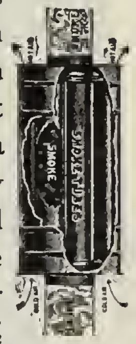
Common Sense Circulator and Radiator.

(Patent applied for.)



This Heater is so simple that its superiority over all others is plain. Being open at each end the cold air is taken in at the bottom, passing out at the top heated; producing a circulation unequaled by any radiator. Is easily cleaned or repaired. Takes the place of a joint of pipe. Diameter of casings, 10½ and 12½ inches. Send for prices.

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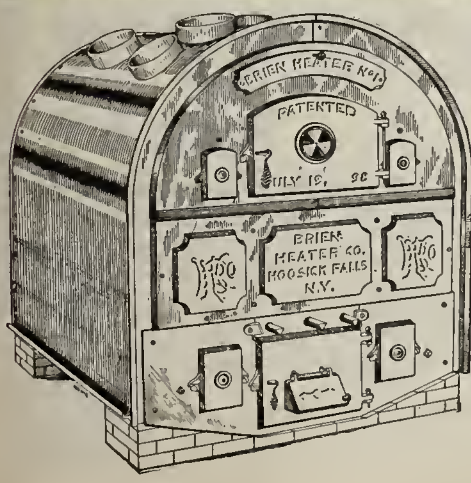

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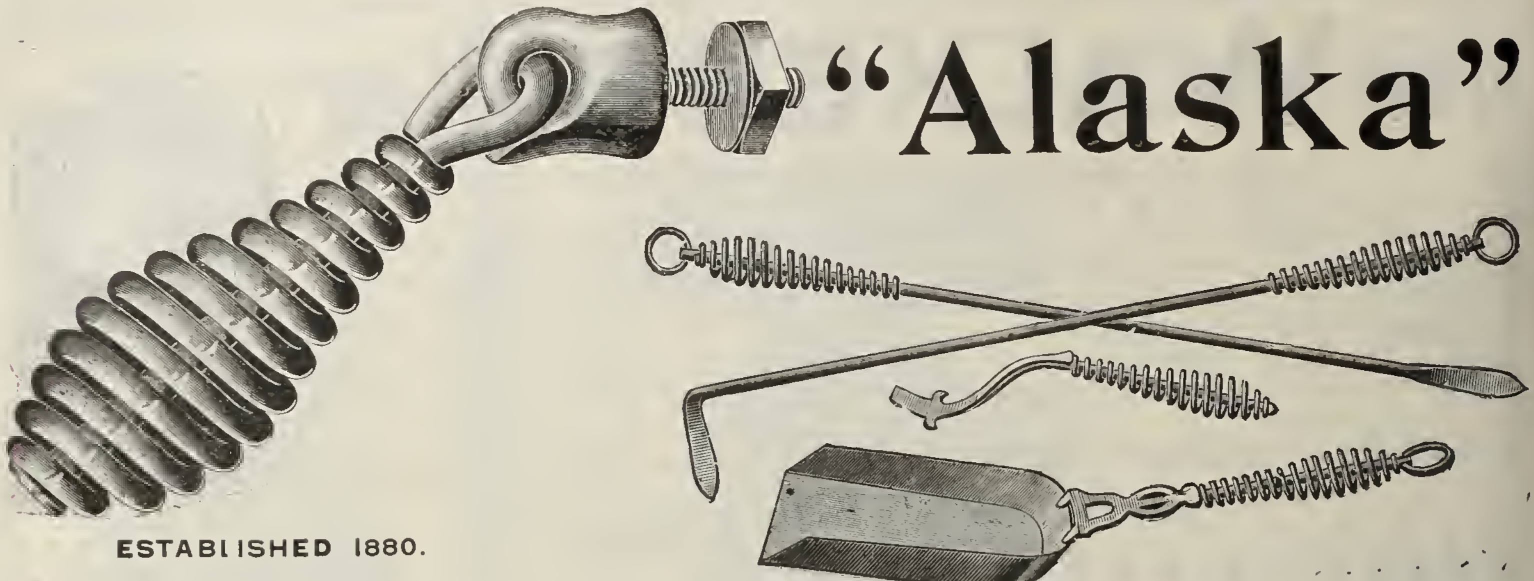

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Perfectly round and true to size. With long ends, DOUBLE LOCK SEAM in throat or under side of Elbow.

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Can easily be adjusted to any thickness of wall, and when screwed up tight against plaster will not work loose and allow the plaster to crumble and fall.

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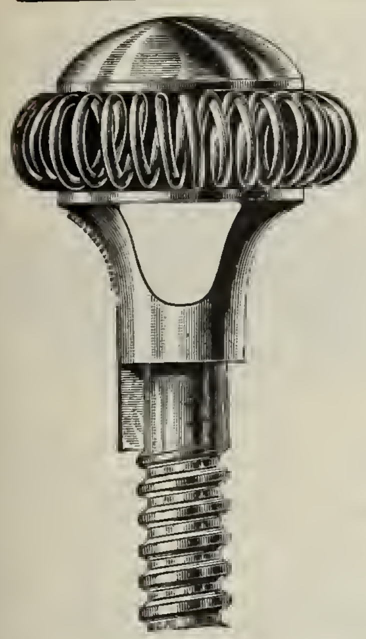

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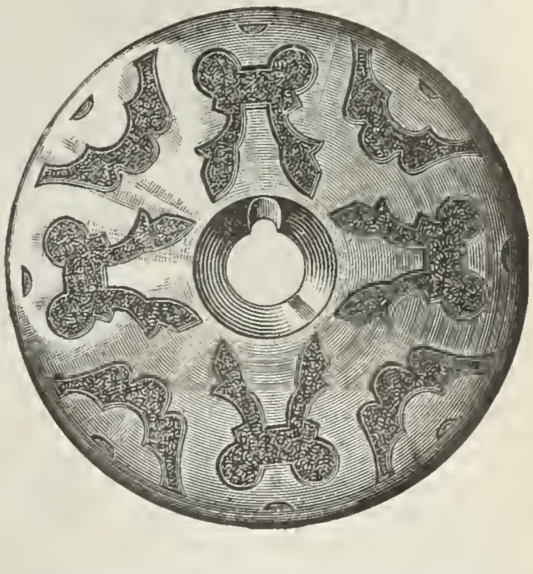

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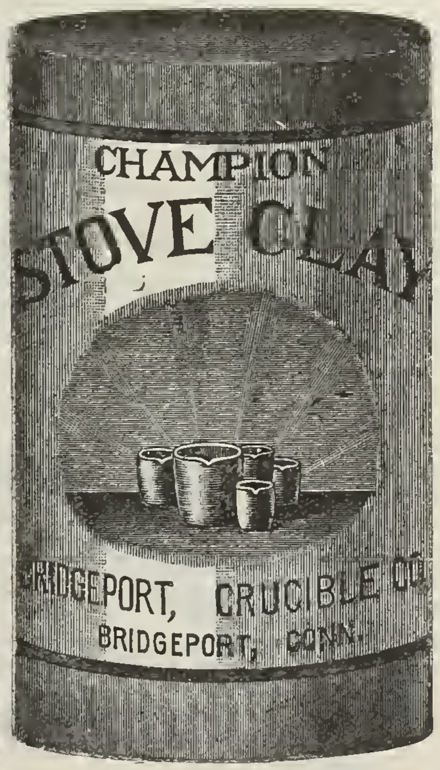
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Above All—Cheapness—a dealer cannot possibly make dampers as cheaply as we sell the Yankee. Easily put in and taken out of pipes. Stiffest, quickest-working and neatest damper on the market.

It is impossible for this rod when in position to move either way.

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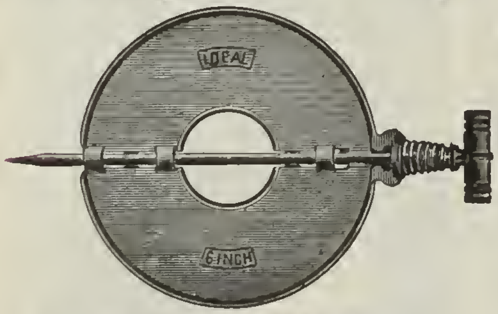

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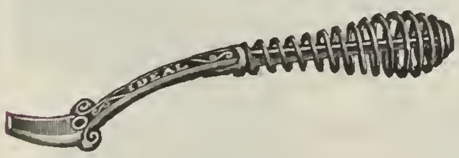

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There is nothing equal to it for repairing fire brick in stoves, furnaces, etc. Let us send you sample and prices.

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A BRILLIANT JET BLACK ENAMEL THAT NEVER WEARS OFF
MNF'D BY
THE NICKEL PLATE STOVE POLISH CO
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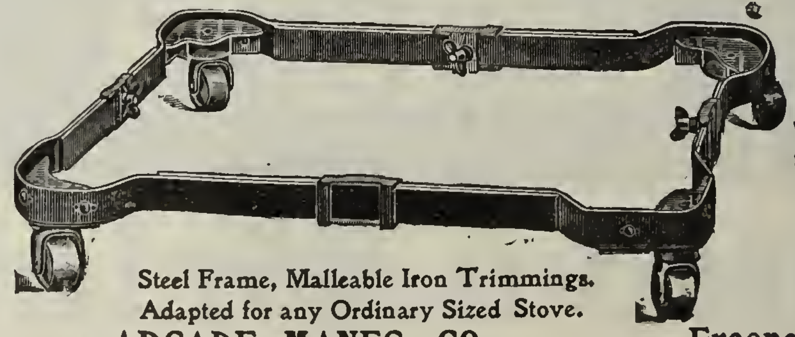
Fully Warranted.



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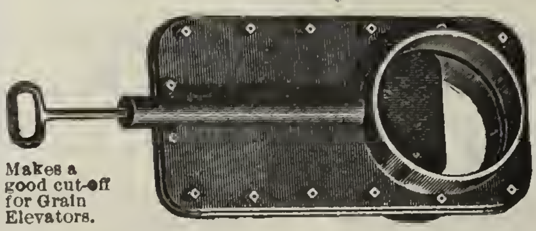

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The attention of readers of THE METAL WORKER is directed to the *fifth and enlarged edition* of Kitchen Boiler Connections, just published. Four editions of this practical book have been sold, giving apparently universal satisfaction, but with a view to presenting a more thorough treatise on the subject, and to enhance the value of the book to the Plumber, Architect and Mechanic, we have incorporated with this edition about sixty-five pages of new matter, together with over forty additional illustrations.

These additions cover many important phases of the subject not discussed in the earlier editions, giving practical solutions of numerous other problems often met with.

The new contents include among other important subjects:

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" VIII. Proper Connection for a Horizontal Boiler.
" VIII. Double Water Back Instead of Double Boiler.
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Examples from actual practice only and which have arisen in the daily work of plumbers and pipe fitters are given in this book, which is therefore practical from beginning to end. Every mechanic, whether expert or novice, should have on hand for constant use or for reference a copy of this the new fifth enlarged edition.

It tells How to Connect Kitchen Boilers and Water Backs Under all Conditions.
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Two illustrated articles describing How to Run Mains, Lay Pipes, and Put up Gas Fixtures.

116 Pages, 54 Illustrations, 5¾ x 8 inches, Cloth, Price, $1.00.

This is a concise and practical manual on the ***best methods of doing gas fitting.***

It fills a need experienced by American mechanics for a handbook giving ***plain and simple instructions*** in this important department of plumbers' work.

The book consists of two accounts, both by expert gas fitters.

Each account is complete in itself, and as they treat the subject quite differently the book will be found more particularly valuable and complete.

The numerous illustrations help to show how many things are done which are difficult to describe in words alone.

This manual is, in short, well adapted to the practical requirements of plumbers and gas fitters.

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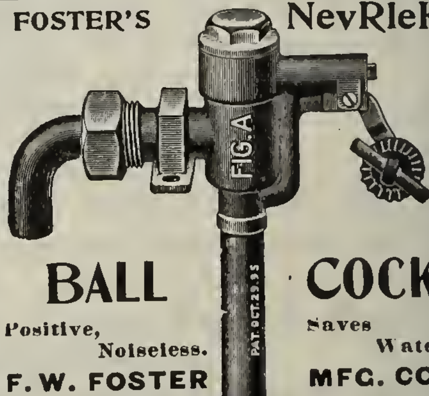

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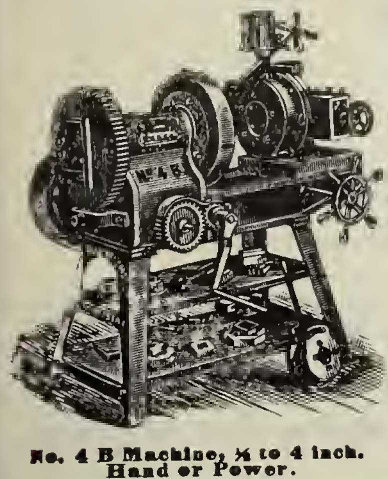

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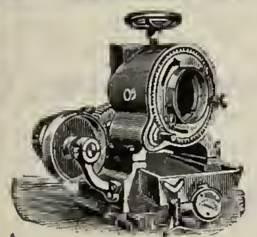

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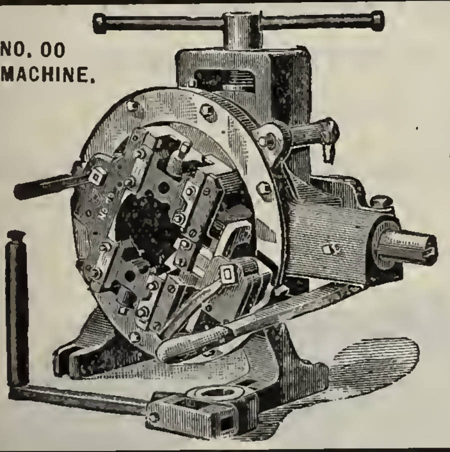

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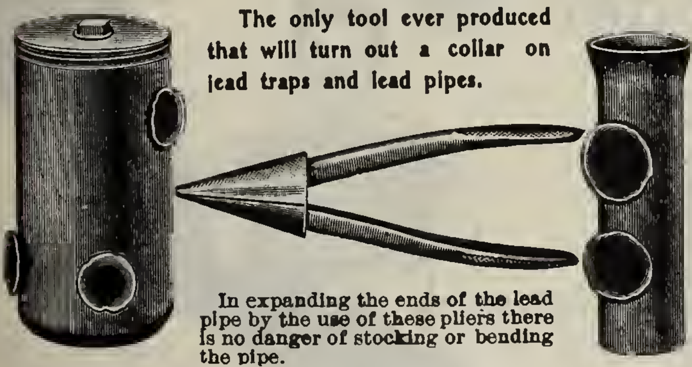

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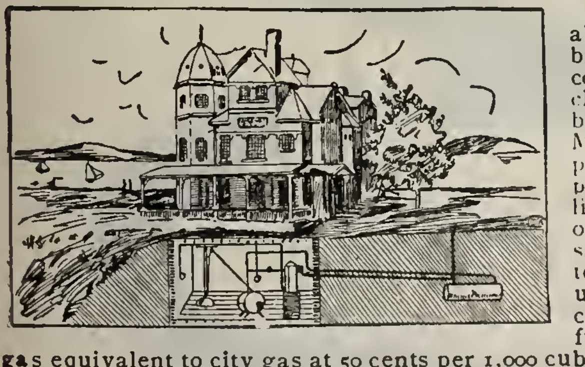

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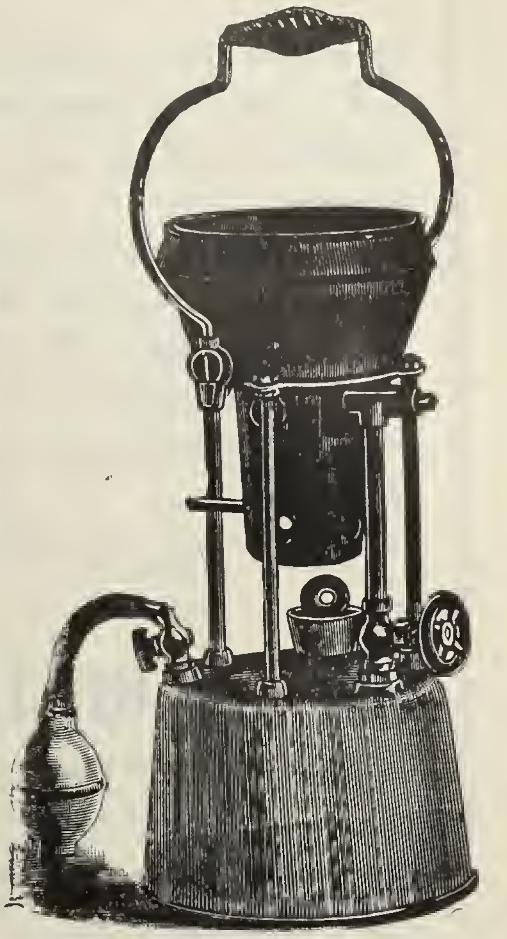

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Quantity shipments are packed in cases 6 and 12 furnaces each.

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It weighs less than any other Furnace now in use.

In placing on the market **our Improved Plumbers' Furnace** we have fully succeeded in producing ***the best furnace made.*** Most perfect in every detail. Of the highest efficiency. In operation, positive and reliable. Of substantial construction; combining lightness, strength and durability, at no more cost to the trade than the old style.

All component parts are interchangeable, being accurately made and fitted before shipment.

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Warms thoroughly and to the proper temperature great volumes of air, by passing it through the flues, and conveys it to every part of the building.

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THE METAL WORKER.

NEW YORK AND CHICAGO.

New York, May 24, 1902.

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The Heating Trade.

The condition of business in the heating trade seems to be generally satisfactory. Many houses report that their sales this year, so far, have kept pace nicely with those of preceding years. This is evidence that the steam fitters are not only reasonably well engaged, but are also fairly satisfied with the prevailing prices. The enterprise of the manufacturers catering to this branch of trade is shown in the number of new boilers that have already been put upon the market this year, and in the improvements in goods that were previously popular. New radiators have also been brought out by some of the old houses in the business, and circulars are being distributed by a new radiator concern who are just entering the field. The information will doubtless be received with satisfaction that not only has the market for this class of goods held steady so far, but that, at a recent meeting of the manufacturers it was deemed inexpedient to unsettle the market by advancing prices. This policy reflects the conservatism of the trade, as the prevailing conditions would provide a sufficient reason for an advance at this time. The price of pig iron is holding remarkably steady at what is considered a high level, while molders' wages and the price of supplies have been advanced. In view of these facts it is natural to find some who strongly advocate advancing prices to meet the increased cost of production. The advisability of such a step has not lacked earnest and intelligent support when the matter has been under discussion, but after a thorough consideration of the subject the different views have become reconciled and the decision reached to maintain prices at their present level, for a time at least.

The Steam Supply Consolidation.

Evidence is now manifest that the lures of consolidation have attracted the manufacturers and distributers of steam goods and supplies. The subject first received attention about two months ago, and on discussion gained sufficient consideration to secure the appointment of a committee of representative manufacturers east of the Ohio River. Originally there was some intention of consolidating much wider interests, but the work of the committee has been confined to the territory mentioned. Apparently the plan of this consolidation has been eminently practical, for it includes not only the manufacturing plants, but also the distributing agencies. Some of the houses invited to consider the proposition with a view to final acceptance are large jobbers in their respective cities, while others are both manufacturers and distributers of supplies in this line. As far as can be learned, the basis on which the committee is working is that those who enter shall place a value on the plant, stock or whatever they have to offer, such as would meet the approval of careful business men, and receive cash in return. The book accounts of all that may enter the consolidation are to be retained by the old concern and collected by them. Should the combination be effected on such lines, the new company would be relieved of the work of a collective agency that would otherwise engross a considerable amount of their energy and attention. At the present time, however, the enterprise has not reached the point where it can be said that it is certain to be carried into effect, but those who buy valves, steam goods and supplies of that character undoubtedly will be informed of the consolidation through the proper channels, should the labors of the committee end in the organization of a large company devoted to this branch of industry in the East.

The United State Steel Corporation's Statistics.

The statistics of production recently issued by the United States Steel Corporation present the opportunity for some interesting deduction and comparisons. Considered alone, the figures are stupendous. They are particularly significant to those who are familiar with the general statistics of iron and steel production by the various countries of the world. Pre-eminence is especially shown in the output of steel. The total production of steel ingots in the company's fiscal year ending March 31, 1902, was 9,034,580 tons, which was 67 per cent. of the quantity turned out by all the steel works of this country in the calendar year 1901; over 40 per cent. more than the entire production of Germany in the same year, and over 80 per cent. more than the largest annual production of Great Britain. Taking the combined steel ingot production of Germany and Great Britain the figures show that the United States Steel Corporation turned out fully 80 per cent. as much. In pig iron the comparison is not so striking, as the furnaces of the corporation are almost wholly operated on pig iron for steel making purpose, while all iron making countries turn out a considerable product for foundry use. Nevertheless, a very good comparative showing was made in this branch. The total furnace product of the corporation in the same twelve months was 7,152,121 tons, or 45 per cent. of the quantity produced in the United States in the calendar year 1901; 80 per cent. of the largest annual output obtained in Great Britain and 84 per cent. of the largest annual production reached by Germany. If comparison could be made with the production of pig for steel making purposes alone it would undoubtedly be found that in this branch the corporation would display the same pre-eminence as in steel ingots.

Turning to another view of this matter, it should be observed that these figures show that the United States Steel Corporation have by no means the monopoly in steel or pig iron with which they were credited when the great project was launched. It will be remembered that various writers at that time estimated that the combined constituent companies would turn out from 80 to 90 per cent. of the steel product of the country and much more than 50 per cent. of the pig iron product. Their product, however, falls considerably below these percentages and would be still lower if comparison could be made with the country's output in the same twelve months as those covered by the corporation's statistics. The first three months of the calendar year 1901 were considerably less active than the first three months of 1902, and the product was therefore less. The statistics consequently show that a considerable part of the iron and steel production of the country is turned out by independent manufacturers. Their output is further increasing more rapidly than that of the United States Steel Corporation, as shown by current news regarding improvements in old works and the establishment of new ones.

St. Louis Fair Postponed.

The announcement by the management of the Louisiana Purchase Exposition, or, as it is generally called, the St. Louis World's Fair, of the postponement of the enterprise until 1904 was generally expected and therefore was not received with any surprise. It had been evident for some time past that the progress made with the buildings and grounds for the proposed exposition had not reached such a point as to make it probable that the exposition plant would be ready for opening in May of next year. The experience of other large expositions has shown that throwing them open to the public before they are completed, or in anything like regular shape, has been detrimental to the interests of such enterprises, and the St. Louis Exposition managers are wise in declining to run the risk involved in a premature opening. Moreover, the postponement of date will probably enable them to secure a better representation of American manufactured products and also to offer more of those attractions which are relied on to commend an enterprise of this kind to the general public. For example, in the matter of flying machines; some of the prominent inventors and others interested in the field of aerial navigation expect by 1904 to be able to make a much better demonstration than would be possible next year. If the managers of the St. Louis World's Fair are able to arrange with their exhibitors to have everything in place and in running order, without fail, on the day of opening, so that the public may be admitted to see the full attractions of the exposition from the very first, they will make an enviable record in the history of such enterprises.

Suggestions to American Exporters.

In a recent report to the State Department at Washington, Consul Thornwell Haynes of Rouen, France, presents, for the benefit of American exporters, some useful suggestions in regard to methods to be followed in order to successfully secure a market for their goods in France. He says that improper introduction often causes prejudice against American goods in that country, and he gives an instance in which American machinery was recently installed by a manufacturing concern in the city of Rouen. All the details were carefully looked after and the circumstances of climate, care, use, &c., were taken into consideration, the machinery being erected under the personal supervision of Americans. The success of the installation in question promises a considerable market for that particular class of machinery in France. In a neighboring city some American machinery of another kind was improperly constructed and installed. The result was failure, loss of reputation and the closing of that market, and perhaps others, to the sale of the machinery referred to. Not only, says the Consul, must attention be paid to the customs of the country when making a sale, but care should be taken that the goods are delivered in proper shape and condition. No American exporter can hope to build up a permanent and successful business in France unless he works for the good of his customers on that side.

The Consul believes that expositions of American goods in the principal cities of France would do much to extend American trade there. A Frenchman must have ocular and tangible demonstration of the validity of every claim made for an article. All the United States consuls abroad reiterate in their reports the uselessness of sending circulars, letters, &c., in English. The representative of a firm manufacturing heating apparatus told the Consul recently that he had learned that English circulars were worth nothing; that French circulars were better, and commercial travelers understanding the French language still better; but that an exposition of the goods most fully met all the requirements. The gentlemen referred to represents an American company who regard France, where only coal stoves and grates were known, as a splendid field for trade, and are not content with an exposition of their products, but have established a large factory near the center of France, in which they produce modern, up to date cooking appliances. The raw product comes from America, and the finished goods are gradually being sold all over France. So far this enterprising firm have a monopoly of the business and are succeeding wonderfully. Among the points suggested by the Consul as tending to facilitate an increased American export trade in France are to include all costs, such as freight and insurance, when quoting prices; to give long credits; to adhere strictly to the metric system of weights, measures and money values; to endeavor to sell the buyer what he wants, regardless of what the seller may think he ought to have, and to give the most careful attention to the question of packing and the manner in which the goods will reach the customer.

The crop prospects have improved materially during the past week, because of weather conditions. In the winter wheat belt especially, the weather has been all that could be desired at this season, needed rains having fallen over the region in which there has been a marked deficiency of moisture heretofore. Favorable reports are received from the Ohio Valley and also from the Northwest and California. In the Government May report the condition of winter wheat is regarded as indicating a total crop of between 340,000,000 and 350,000,000 bushels, which, if maintained, will mean a yield that has only been exceeded four times in the past ten years.

The Executive Committee of the National Association of Manufacturers have decided to move the general offices of the organization from Philadelphia to New York City. One reason for the removal is that it has been found difficult to get foreign buyers to go to Philadelphia, whereas in almost all cases they pass through New York. Moreover, the Empire City is more centrally situated for the convenience of the majority of the members of the association.

THE WESTERN STOVE TRADE.

Seldom, if ever, has trade been more active or more satisfactory in all lines of stoves, furnaces, boilers and other heating appliances than at the present time. Most manufacturers in this section have orders booked for fall delivery much in excess of last year or, in fact, any previous time, one or two reporting that they have booked more orders during the past five months than they did in nine months last year, and another more business 30 days ago than was taken the whole of last year. More business, too, has been done for spring, although up to the present time this has not been of a character to call for special comment. At this season of the year a lull is usually expected, and a number of salesmen are returning home preparatory for the fall trade. One foundry, finding business so active, was compelled to lay off salesmen for one month, but they are again on the road. The large volume of fall business already placed is attributed, in a measure, to the scarcity of and high prices prevailing for raw material. A general feeling among the consuming trade that whatever change there may be will be for the better has stimulated buying. Business in boilers and furnaces is in excess of the average business booked at this season, but notwithstanding the great volume of trade in this line for large buildings, there is a steady growth in stove and heater consumption. The activity in building small houses in the suburbs due to the increased number of salaried men who are providing homes accounts for this continued growth. Dealers are enjoying liberal sales of gas, gasoline and oil stoves and other summer goods. Little difficulty is experienced in obtaining full prices for all lines of goods into the construction of which iron and steel enter. The growth of the trade encourages manufacturers to enlarge their field of action, and more salesmen are being employed than at any previous time.

Considerable interest is felt in the trade regarding the agitation of a manufacturers' combination, but the impression seems to prevail that conditions, especially at the present time, are against the consummation of such a project.

MORE WALDORF-ASTORIAETTES.

BY JEEMS.

The nation has become so used to war that we are rapidly drifting into a grand military organization, and now have a well defined corps of business men, who rank by popular consent as "captains of industry," and the stove manufacturers have their industrial commandants, and some of those are of the regular old fighting stamp who used to make the captured walk the plank. They can chew iron and scuttle a stove and hang a man to the foreyard as good as any of the old buccaneers.

* * *

As business is conducted now it is war, and it is run on war methods. Raids are planned regularly from some industrial headquarters and the fun begins. The solitary vidette dodges along the road, then the skirmishers and finally the squadron, and then the whole caboodle rush on somebody's customers and the peaceful and quiet business relations of years are razooed off the earth. In the language of Captain Abe Mott: "It's Hell," as old Pop Sherman said.

* * *

Now no one would think for one instant that Captain Boal or Captain Barbour or Captain Kahn or Baron Van Cleave countenances these raids, although there are some who are unkind enough to say that they would, but the fact is in evidence that they are fully alive to the danger and unpleasantness of these raids on the enemy's territory, and, like General Grant, they say, "Let us have peace." Amen.

* * *

One of the prime reasons adduced in favor of consolidation is that it largely represses the greatest of all evils in business, "undue and pernicious competition." Now is that a good thing to do? Read the following extract from one of Dr. Rainsford's sermons:

> When we denounce competition we denounce a divinely ordained process for weeding out the imperfect. Nay, further, we denounce the only conceivable process by which sorrow, pain, imperfection and at last death itself can be done away. Let us gird up the loins of our minds, face facts and cease crying for the moon. By competition we are what we are. By competition our children shall be, please God, better than we. God's great competitive examination board is ever in session, and through it our nation has been lately passing, as you well know; for what after all is war but the competitive examination of nations?

Some will say the doctor is "nutty," but should it be proved that "competition was a divinely ordained process" you might just as well give up at once. You cannot succeed.

* * *

There were a great many wise Mikes around, inside and outside the meeting, who could point out exactly the proper caper and the cheesy thing to do, but they got no chance to get off their bazoos. One of those said: "Nixy wixy" (that's Bowery for "you don't get it") "unless I get a cheque for the whole business. No stock for me." This shows what many expect when they hand over their valuables. We will see about all this later.

* * *

The all-together plan is nearer completion than many think. The fact leaked out that they had secured the second floor of the "Flat Iron" on Broadway and Twenty-third street for offices, &c. They wanted the first floor, but Morgan got it for his steamboat lines. It was a great stroke of business to locate there, so handy to everything. It is just like a country foundry office—it's so different. It is fair to say that the report is denied, "but what the deuce was that crowd always looking up at that building for," said a member.

* * *

President Parlin delivered his address and presided in true New England style. The fact is you would think you was in the "Old South" in Boston listening to one of those good old homilies that the church was famous for. Squire Parlin, as he is known "to hum," is a mighty big man, and a sterling man in all respects.

* * *

In spite of all the attractions around New York it is doubtful if ever a larger number attended the sessions. The room was always full, and the consequence was that things were dispatched on time.

* * *

"Them air camp followers air a great lot, ain't they?" exclaimed one of the members from an outlying district after he had been called from labor to refreshment by some of the troop. Right he was. There was Captain of Industry Latty that kept them all in line. He had dress parades of the squad several times a day, also at stated intervals in the evening *à la militaire:*

Sergeant (saluting): "Mornin', Cap'n."

Cap'n: "Mornin, min. Yez look as fine looking as a lot of down East quahogs waiting for the tide to rise. Shure you need it. Sarjint Ireland, take the min down to the beach and fill them up. There will be a big spring tide this day."

"What's the matter with Cap'n Latty?"

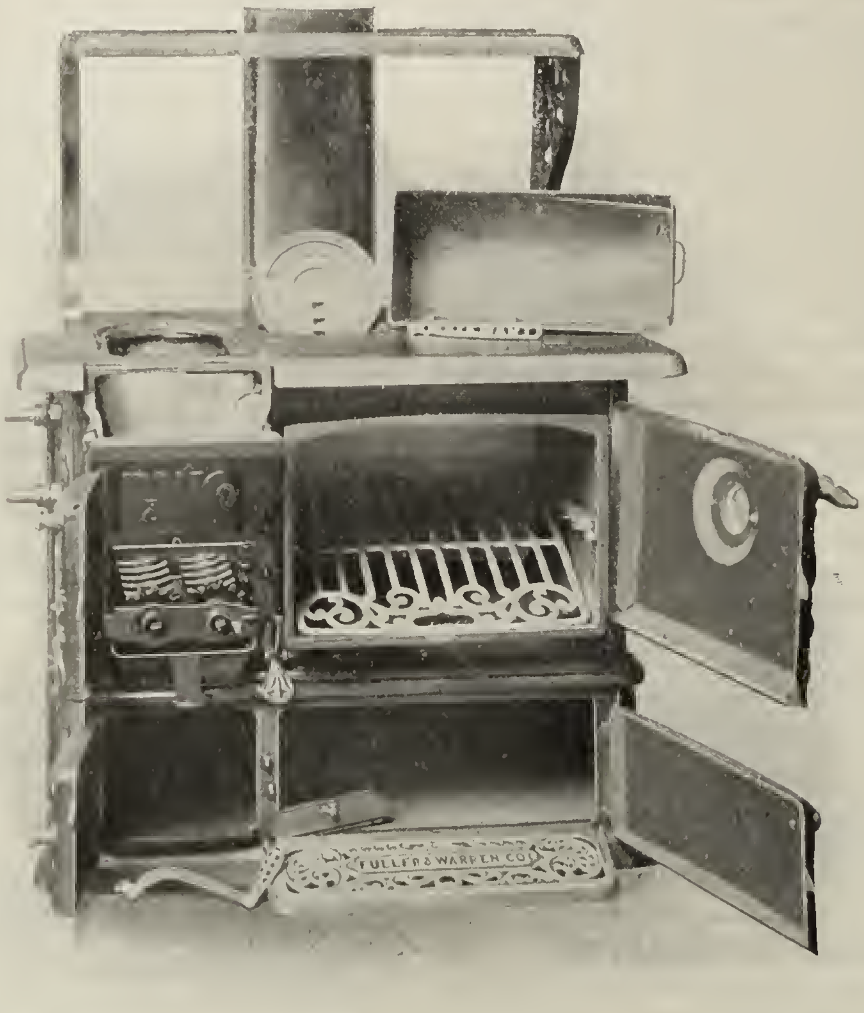
"He's all right!"

* * *

A very strong effort was made to hold the next meeting in New York, but the claims for other places to have it were conceded, and Cleveland was chosen. Cleveland can really claim the honor of being one of the landmarks of the association. It was there that the Defense Association was first formulated and organized and a salaried secretary was appointed, which contributed so materially to the success of the organization. It was also the scene of an oratorical outburst of Jake Smyser of Louisville, Ky., regarding prices of one of the prominent members at that time. Jake was old Kaintuck out and out, and would stand for no fooling. He was a powerful advocate then for consolidation, but as it did not work he went out of the stove business and took to car building, got it in big shape and went into a so-called trust. The consequence is Jake is living on Easy street, with nothing to do but play Ping-Pong or Bridge and hack off coupons. How lucky! Jake always practiced what he preached, and he was a right powerful preacher.

The Ideal Stewart Range.

The stove dealer who is desirous of securing a range capable of meeting a wide variety of requirements will be interested in the Ideal Stewart French or flat top range, made by the Fuller & Warren Company, Troy, N. Y. The illustration given in Fig. 1 shows this range as adapted for general and house use where a high grade range is desired. As may be seen, the grate can be readily removed from the fire box. An ash sifter is provided beneath the grate, and a large ash pit with an ash pan. Beneath the oven is a warming closet, and the oven door is provided with what is now proving to be a great convenience to housewives—an oven thermometer. The top is equipped with Boston covers, so that cooking utensils of different diameters may set directly over the fire. Fig. 2 shows the damper construction and arrangement by which the operation of the range is governed. It is pointed out that the damper lever, or rod, is entirely outside of the range, instead of in the flue, and in consequence is not exposed to the fire or its effect and is practically indestructible. The damper is balanced so that it is readily operated. This range is made with large water backs, and is also provided with large reservoirs attached to either the right or left hand ranges. The ranges are made with 6, 8 and 9 inch covers, ovens 18 and 20 inches square, high shelves and warming closets, and all the usual conveniences.



The Ideal Stewart Range.—Fig. 1.—View Showing Features of Convenience.

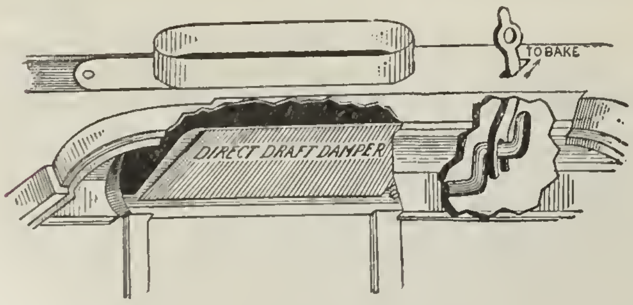


Fig. 2.—The Damper Construction.

A new feature is the twinning of these ranges for use in hotels or large boarding houses. By the use of special castings the oven ends of a right and left hand single oven range are connected, giving a fire at each end, 12 8 or 9 inch boiler holes and two 20-inch ovens, the top being 28½ x 83½ inches long. The advantage of having two fires at opposite ends of the range is a great convenience where a great deal of cooking is done. Above these ranges, a three-section hot closet is provided. They are also equipped with extra large water fronts. Another advantage is that it is not necessary to run both fires when only a small number are to be cooked for. The company make, as a part of the equipment for kitchens where these ranges are used, a special boiler fitted for the use of either hard coal or charcoal.

PHILADELPHIA HEATER AND RANGE ASSOCIATION.

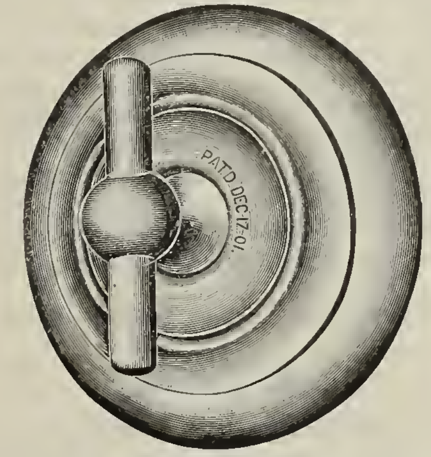
The regular meeting of the Philadelphia Heater and Range Association was held at the Builders' Exchange in that city, Wednesday, May 14. There was a good attendance, and after the regular business of the meeting the election of officers for the ensuing year was held, resulting as follows:

President, Edward Richards.
Vice-President, Robt. Baile.
Secretary, J. H. Osmond.
Treasurer, C. C. Augustine.
Trustee, William Earley.

An interesting address was made by the president, in which he explained the object and the benefits which have resulted from the efforts of the association. The interest displayed by those present is an indication of a successful future for the organization. At the close of the meeting luncheon was served.

Sheet Metal Draft Register.

The H. A. Matthews Mfg. Company, Seymour, Conn., well-known manufacturers of stove trimmings, have recently put on the market the patented sheet metal draft register of which an illustration is given herewith. The threads are cut and the disk is securely fastened without cotter pins or washers and the register can be made either loose or tight, as required. The company manufacture these registers in stock sizes—2½, 3, 3½, 3¾, 4, 4⅛, 4½ and 5¼ inches—but they are also prepared to make them in quantity in any other sizes.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Sheet Metal Draft Register.

ODD PLATES.

The H. Adler Mfg. Company, Pittsburgh, Pa., are receiving bids for the erection of a new plant, which they are about to put up at Carnegie, Pa.

The Syracuse Stove Company, Syracuse, N. Y., have advanced the wages of their employees from 5 to 10 per cent.

The Glazier Stove Company, Chelsea, Mass., will erect a brass foundry in connection with their plant containing six furnaces.

The Novelty Wickless Blue Flame Stoves are the subject of a little pamphlet lately issued by the Novelty Mfg. Company of Jackson, Mich. The goods are illustrated and briefly described, and in connection with the matter is a table showing the comparative cost of gas and oil for fuel purposes. Strong claims are made for the Aluminum Oil Heaters, which the company manufacture, these being offered in several sizes with oil founts ranging in capacity from 3 quarts up to 1½ gallons. These Heaters are claimed to be smokeless and odorless, and it is said the flame will not climb up after lighting, as it does in some of the old style Heaters.

A neatly printed catalogue sent out by the Lithgow Mfg. Company, Louisville, Ky., illustrates and describes the various lines of Capitola Stoves and Ranges turned out by this enterprising concern. The goods are made in such variety as to meet all reasonable requirements, special attention being called to the Capitola Steel Range, which is made with single and also with double oven. The ornamentation of the company's Cast Cooks and Ranges is rich and effective, and the constructive features are of the modern type. Numerous lines of Heaters, which are shown, include Oak, Franklin, Globe, Cannon, Box and Laundry Stoves. A miscellaneous line of Hollow Ware, with prices and dimensions, constitute a feature of the closing pages of the work.

The North Dighton Co-operative Stove Company, with office and foundry at Taunton, and post office address North Dighton, Mass., call attention to the merits of the Oakland Queen Range in a four-page folder which they issue. The Range is made in three sizes, adapted for using wood or coal as a fuel, has a large oven with two racks, and the company claim it will cook evenly three tiers of food at a single baking. The back of the oven is covered with aluminum, thus rendering the oven light and at the same time filling the pores of the iron, thus tending to prevent the heat from escaping through the back. A neatly printed pamphlet in colors illustrates and describes the Oakland Ranges and Parlor Stoves, which are offered in several varieties and embody the latest features of construction and ornamentation.

The Central Oil & Gas Stove Company of Gardner, Mass., set forth the merits of their Blue Flame Oil Stoves and other specialties in a profusely illustrated pamphlet designed for general distribution among the trade. These Stoves are offered in a variety of styles and sizes and embody such features of construction as to render them the basis of strong claims on the part of the manufacturers. In addition to Automatic Blue Flame Oil Stoves the company call attention to a great variety of Lamp Stoves, to the Fairy Queen, Summer Queen and Reliance Oil Stoves, Hot Plates, Nursery and Heating Burners, &c.

The Safety Furnace Pipe, which is claimed to be manufactured on scientific principles by the Safety Furnace Pipe Company of Detroit, Mich., is the basis of an interesting pamphlet which the makers have issued for distribution among the trade. The Pipe is referred to as economical, safe and durable, each and every section being double and so constructed that air passages running its entire length between the inner hot air duct and outer casing are supplied with cold air through a foot piece of peculiar construction. It takes up the heat radiated from the hot air duct and brings it again into use through the upper section of the register box, thus keeping the outer casing cool and safe, and at the same time saving the heat thrown off by the inside duct.

The annual meeting and election of officers of the Keely Stove Company was held on May 12, at their office in Columbia, Pa. The reports of business transacted during the fiscal year were highly satisfactory, showing the enterprise to be in a flourishing condition. The election of directors resulted in the selection of the following: Horace Detwiler, Hiram Wilson, H. F. Bruner, William Patton, J. H. Herr, D. H. Detwiler, W. B. Given, William Morris and Frederick Bucher. The board organized by electing the following officers: President, H. F. Gruner; secretary and treasurer, Edward Shomier, and solicitor, H. M. North.

The *Bee* of Toledo, Ohio, says that H. L. Slosson, secretary and treasurer of the Charles Thatcher Company of Waterbury, Conn., has been in conference with representatives of the Toledo Chamber of Commerce with a view to selecting a site for a proposed factory for the manufacture of Asbestoline Non-Rustable Stove Pipe and other goods, which will be manufactured by a company now being organized with a capital stock of $50,000. The company are anxious to locate themselves in the Middle West, and the advantages of Toledo for this purpose are being carefully considered.

The Malleable Steel Range Mfg. Company of South Bend, Ind., are offering the Malleable Range for families and hotels in a great variety of styles and sizes. This Range embodies the modern features of construction, and the company state that only the best materials and workmanship are employed. The makers also turn out a Combination Coal and Gas Range, this being offered in two sizes and intended for using artificial or natural gas. There are several sizes of Range suitable for hotels, and in addition to Gas Ranges the company are prepared to furnish kitchen outfits, including Steam Tables, Carving Tables, Charcoal Broilers, Coffee and Tea Urns, &c. In a catalogue which the company are sending out directions are given for operating the Malleable Range, and there is a short chapter on malleable iron.

The H. E. Hessler Company, Syracuse, N. Y., have issued a catalogue devoted to Water Fronts for Stoves and Ranges. A feature of the catalogue is a notice that "the Water Fronts and Repairs for the Stoves and Ranges sold by the house are not made from original patterns and are sold with this understanding, no attempt being made to deceive the purchaser. The Repairs are warranted to fit the Stove or Range called for, and if not satisfactory may be returned." The catalogue consists of 32 pages, and an alphabetical list of the names of a large variety of Stoves for which Water Backs are carried in stock. The concern also state that in addition to Water Backs they carry a large stock of Stove Repairs, as well as a full line of Tin Shop Supplies, Tin Plate, Sheet Iron, Rivets, Stove Bolts, Stove Putty and Fire Clay.

The American Vapor Stove Company are having plans prepared for an addition to the power house of the Dangler Stove & Mfg. Company, recently absorbed by them. The plan is to install additional electrical equipment with a view to operating the plants of the Standard Lighting Company and the Schneider & Trenkamp Company, both of which have also been absorbed by the American company. All machinery in the three plants will be driven by motors.

George H. Barbour, vice-president and general manager of the Michigan Stove Company, Detroit, Mich., has been appointed chairman of the Legislative Committee of the National Association of Manufacturers. This is the largest and strongest organization of its kind in America, embracing in its membership all classes of manufacturing interests. The Legislative Committee will look after some of the most important interests of the organization, and the chairmanship of this committee is therefore a position of honor as well as great responsibility.

The Art Stove Company, Detroit, Mich., have secured a building seven stories in hight, 43 x 90 feet, at 79 to 83 South Jefferson street, Chicago, which they have fitted up as a sample room and warehouse for the product of their foundry. They already have nearly a full line of their 1902 Stoves and Ranges on exhibition, not a few of which show improvements over the patterns of a year ago. Henry H. Sanford, who has long been located at Detroit, is the manager of the Chicago branch, and there can be little doubt that a vigorous policy is to be adopted and maintained in that territory.

In announcing in our issue for May 10 the organization of the New Century Stove Company, the location of the place was inadvertently given as Moxham, W. Va., instead of Moxham, Pa.

The St. Louis Enameling Company, Ninth and Monroe streets, St. Louis, Mo., have just issued an interesting little pamphlet setting forth the merits of the Enameled Steel Ranges which they manufacture in varieties adapted to meet many requirements. The manufacturers point out that "the greatest merit in the artistic Enameled Steel Range is that the regulation of heat has been reduced to such mechanical precision that perfect results in cooking are insured even to the most inexperienced." Special reference is made to the economy and durability of these Ranges and to the fact that while the company only carry in stock the blue mottled and brown mottled Ranges, they can furnish them in any color, such as white, light brown, light blue, delft, yellow, &c., with very handsome decorations. In addition to the illustrated description of the Ranges, there are presented numerous testimonial letters from some of those who have used the company's goods.

W. H. Colebrook Sons & Co. of Syracuse, N. Y., are distributing an advertising novelty in the shape of a card, measuring 5 x 7 inches in size, to the upper portion of which is fastened a miniature shovel. Above and below the shovel is the inscription, "We mean to keep digging at you to secure your Cement order." Attention is called to Colebrook's Asbestos Furnace Cement and Stove Putty, which is strongly recommended for making Furnaces and Stoves gas tight. The company have selling agencies in Chicago, Baltimore, Philadelphia and Boston.

The improvements in the plant of the Excelsior Steel Furnace Company, 38 and 40 West Monroe street, Chicago. which were begun about three months ago, are nearly completed. The enlarged premises give the concern almost 100,000 feet of floor space, all well lighted and admirably adapted for the purposes intended. Two elevators and four shipping doors afford ample facilities for handling the product of the plant. The basement and main floor are devoted to offices, storage and shipping, the second and third floors to the manufacture of Furnace Pipe and Fittings, and the fourth and fifth to the production of Stove Pipe, Adjustable and Stationary Elbows. The improvements cost in the neighborhood of $25,000.

The Michigan Stove Company have been remodeling the offices and salesrooms in their six-story warehouse building on Clinton street, Chicago. The changes as made are highly satisfactory, the new arrangement of the offices, especially, providing the clerical force much needed light from which they had heretofore been cut off by the old arrangement. The offices are now commodious and attractive, artistically furnished and equipped with all modern appliances. The arrangements in the salesrooms are practical, facilitating the exhibition of the samples of the complete stock carried. Many carloads of goods are now being received preparatory to filling the heavy orders booked for the fall trade. It is notable that the advertising matter, the liberal use of which has made the product of this company well known throughout the country, is carried in large volume, and is conveniently arranged for speedy distribution.

H. M. Kellogg.

In a letter received from H. M. Kellogg of Cortland, N. Y., he informs us that he has sold out his hardware, stove, plumbing and furnace business to the firm of Cramer & Spencer, who will continue the business along the same lines. Mr. Kellogg began his mercantile life in Cortland on April 1, 1871, in the firm of Cloyes & Kellogg, dealers in crockery and groceries. In 1876 the business was sold out to Mr. Cloyes and Mr. Kellogg formed a partnership with Colonel Frank Place, who had been clerk of the county for nine years. The firm of Kellogg & Place purchased the hardware business of Wickwire Brothers. In 1881 Mr. Kellogg bought out his partner's interest, and for the past 21 years has conducted the business under the firm name of H. M. Kellogg. In 1884 the entire business was wiped out by a disastrous fire, which destroyed several blocks, but he purchased a complete new stock and resumed business as soon as the block was rebuilt. When the business of Wickwire Brothers was purchased the firm had begun in a small way to weave wire cloth and to manufacture coal sieves, having two or three hand looms in operation. This was the beginning of what has grown to be a great industry under careful and excellent management. It is now among the leading industries of Cortland, and is said to be one of the largest enterprises of its kind in the world, employing million of dollars of capital and 1000 workmen, and still expanding.

After 31 years of active, strenuous business life, on duty nearly every day, Mr. Kellogg now proposes to take a little vacation and rest. He says that it is with regret he severs his business associations with the hardware trade, with which he has so long been identified and in which he has formed so many pleasant business acquaintances. He has been a reader of *The Metal Worker* for many years and an occasional correspondent. In bidding good-bye to the "old boys" in the trade, he extends his thanks to them for many favors and courtesies extended to him, and says that he will always be proud to have been associated with such a body of solid, substantial business men, and wishes them, as well as *The Metal Worker*, abundant success in the future.

The store of F. P. Beachy, Carleton, Neb., was badly damaged by fire a short time since. A portion of their Hardware stock in store was saved, and all of their Agricultural Implement and Vehicle stock, the latter being kept in a separate warehouse. Mr. Beachy has resumed business, and expects to continue on a larger scale than in the past. With this in view he is intending to erect a large brick block before the year is out, and will then have a modern up to date store. Mr. Beachey's library of catalogues, price-lists, &c., was destroyed in the fire, and as he is desirous of duplicating them he will value printed matter relating to Shelf Hardware, Stoves, Tinware, Agricultural Implements, Vehicles, Sporting Goods, &c.

Century Rural Mail Box.

The Century Rural mail box made by Briscoe Mfg. Company, Detroit, Mich., is one of the boxes approved of by the Post Office Department. Since acquiring this business from the Century Rural Mail Box Company last fall the company have improved it in a number of particulars, so that as now offered they are confident it fills all requirements. This box has heretofore been almost entirely handled through agents and canvassers. The company have, however, decided that this business belongs legitimately to the hardware trade, and they are making every effort to induce country merchants to handle the mail boxes, in view of the market created for them by the Government and the good profit connected with their sale. To this end they issue a circular in which particulars are given of an offer by which merchants are enabled to secure a sample of their Rural mail box free of charge.

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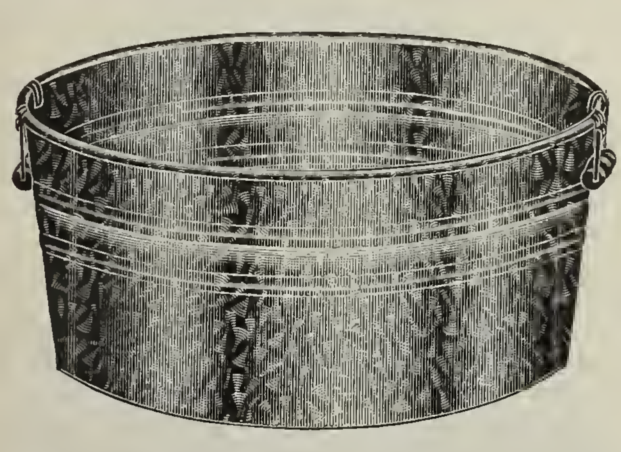
The Brosi Galvanized Steel Washtub.

In addition to the regular line of galvanized washtubs, the Fred. T. Brosi Company, Quincy, Ill., are just placing upon the market the Brosi patented wood handle galvanized steel washtub, a general view of which is given in Fig. 1. These washtubs are made of high grade steel sheets, thoroughly galvanized. They are furnished with heavy bail wood handles, as shown in Fig. 2. In fitting the handle to the tub no rivets are used, but the construction is so arranged that it is practically impossible to tear the bail from the tub. The fastening used for this purpose is shown in Fig. 3. The handles are made of the best selected hard wood and are insured against splitting. By means of these handles the tub can be lifted with much greater ease than tubs having rough iron or wire handles, which are apt to cut the hand.



Brosi Galvanized Steel Washtub.—Fig. 1.—General View.

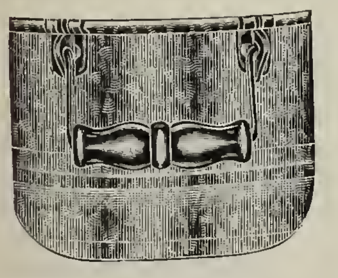


Fig. 2.—Handle and Attachment.

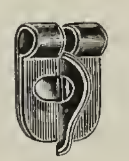


Fig. 3.—Patent Fastening.

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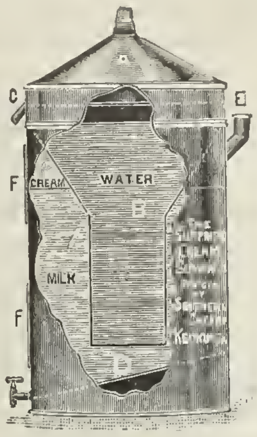
The Surprise Cream Separator.

The Seither-Cherry Company, Keokuk, Iowa, are offering the cream separator shown herewith. The letter A represents the cover and strainer; B, the inside reservoir; C, the overflow tube; D, the sloping bottom; E. the filling tube, and F F, the glass gauges. The separator is referred as being of good heavy tin and durable. In operation the separator is placed on a box or platform that is high enough to permit a bucket to be placed under the faucet. The inside reservoir is filled with cold water, and the cover or strainer is placed in the tube of the outside can. The milk is then poured into the outside can and allowed to stand for 30 minutes. Cold water is then poured in, which will force the warmer water out through the overflow tube. The changing of the water is to hasten the separation. It is stated that the separator is not complicated; that the inside can may be lifted out easily; that it is easily cleaned, and that if used as directed it will separate cream from milk in from three to five hours.



Patent Applied For.

The Surprise Cream Separator.

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The Sayres Corn Grater.

The accompanying cuts represent corn graters manufactured by Chas. W. Sayres, York, Pa., McClellan & Gotwalt Company, of the same city, selling agents. The grater is neatly made of clean poplar wood, 5 x 11 inches in size, having a tinned steel scraper and steel cutters. It is designed to remove fresh corn from the cob, for making fritters, puddings, &c. With the grater, it is explained, the grain and milk of the corn are removed while the hull remains on the cob. The graters shown in the illustrations are the same, except that the one in Fig. 1 is intended to use in a bowl or similar vessel, while that in Fig. 2 is designed to be placed over a low vessel.

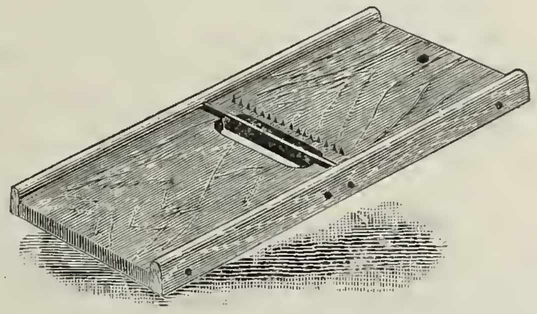

Fig. 1.—The Sayres Corn Grater.

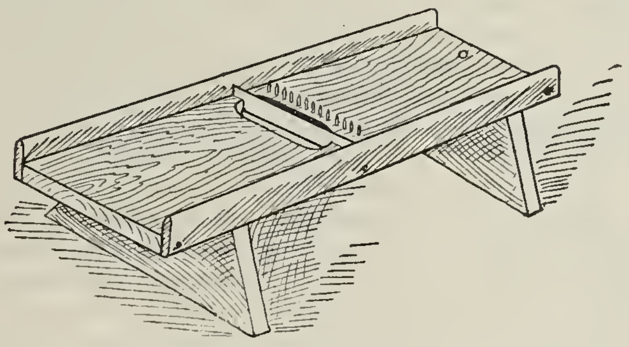

Fig. 2.—The Sayres Grater with Feet.

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Wm. Inglis Wire & Iron Works, Detroit, Mich., have issued a catalogue section B. This is devoted to illustrations and descriptions of Heater and Ventilator Screens, in grille and wicker ornamental metal work. The concern also manufacture Metal Work for various purposes, Electric Lamp Guards, Window and Door Screens, &c.

New York State Association of Retail Hardware Dealers.

A special meeting of the directors of the New York State Association of Retail Hardware Dealers was held in Saratoga on the 14th inst. A large proportion of the directors were present, which was very gratifying, in view of the fact that this is a season of the year when the average hardwareman finds it difficult to get away from the store. A number of important matters concerning the new association were discussed, and several resolutions were passed giving the efficient and aggressive secretary, John R. Taylor, of Little Falls, certain powers which will make it unnecessary for the directors to come together again for some time. In the evening the visitors were handsomely entertained by O. D. Towne and F. W. Gardner of Saratoga at a banquet at the Worden Hotel. The president of the village and a number of persons well known locally were also present. Addresses were made by some of the gentlemen, and the occasion was a most enjoyable one.

A New Freezer Company.

The Alaska Freezer Company, Winchendon, Mass., incorporated under the New Hampshire law with a capital of $100,000, held their first meeting Monday, May 12. The following officers were elected: Wm. H. Brown, president; Wm. H. Barron, vice-president; E. D. Sargent, treasurer and general manager. The above named, with Arthur L. Brown and Mary E. Brown, constitute the Board of Directors. The new company are erecting a substantial main factory building, 40 x 120 feet, two stories and basement, and a galvanizing room, 24 x 40 feet. The plant will be supplied with power from the wooden ware establishment of Wm. Brown & Sons. The product of the company will be known as the Alaska Freezer, and will be made in 12 sizes. The general design of the Alaska, we are advised, will be along established lines and will embody the latest and best in freezer construction, varying considerably, however, from the goods now in common use. Leading features will be a new device for protecting the gears from the salt and ice, spoon shaped floats set at angles from the dasher, and the triangular shape of the complete dasher, making it very easy to free the frozen cream when removing the dasher from can. E. D. Sargent, the treasurer of the company, was formerly Eastern representative of the White Mountain Freezer Company, and is well known among the jobbing trade.

New Miller Lamps.

Edward Miller & Co., Meriden, Conn., and 28-30 West Broadway, New York, have now on exhibition a large number of handsome new designs in lamps for various purposes. There is a large assortment of hanging lamps in new finishes, one of which is a fine green, another a rich shaded red, together with old brass effects, Ionian red and a deep green that harmonizes with almost any interior decoration. These finishes are on brass bases. The lamps take 14-inch opal plain or decorated shades, and have bands pierced so that they can be completed with glass prisms if desired, the latter decoration being especially effective in connection with the export trade. The new table or reception lamps range in size from 12 to 24 inches high to the top of the burner. These to a great extent have the same color effects as found in the hanging lamps. There are richly ornamented as well as plain designs. One is a mat green with metal parts finished in Etruscan gold. Another is in spun brass base with cast feet, the two parts being finished in two colors of brass—one bright and the other an antique finish—for contrast. There are in all about 75 styles from which to make a choice. Another new feature in lamp goods is the electric portables or table fixtures, of which there are about 24 new styles and patterns. These are used the same as the gas portables, except that instead of conveying gas through a tube the electric current is conducted through wires from the chandelier or other source of supply. A new feature in this portable is a beaded chain, by a pull of which the lamp is lighted, another pull extinguishing it.

Stove and Hardware Dealers.

The Retail Hardware Merchants' Association of Ontario, Canada, which was organized May 16, 1901, held its first annual meeting on the 8th inst. in Toronto. The following officers were elected for the ensuing year: E. R. Rogers, Toronto Junction, president (re-elected); Mr. Hawkins, Oshawa, first vice-president; S. Pearsall, Toronto, second vice-president; Jas. Ivory, Toronto, third vice-president; S. J. Greer, Toronto, secretary, and John Caslor, Toronto, treasurer (re-elected). The new Executive Committee comprises the above officials and Albert Welch, T. Hunter, Geo. T. Munn and M. W. Shepherd. This association, while just one year old, is doing good work and will doubtless become increasingly influential in correcting or minimizing some of the evils which confront the trade in the territory covered by it.

The Chicago Wooden Ware Company, manufacturers of Step and Extension Ladders and Wooden Ware sundries, have issued a small illustrated catalogue, together with a list of their specialties of manufacture. Special stress is laid upon the Step Ladders made by the company, in which Southern pine is utilized, strength being one of the features to which attention is called. The company have factories in various places in the South, as well as at Chicago, and they are now calling special attention to their lawn goods, such as Swings, Settees, Chairs, Hammock Frames, Stools, &c. The company have recently placed upon the market a patented Extension Clothes Line Prop. The Prop can be folded to a 5-foot length and is adjustable to any length from 5 to 9½ feet. It is made strong and has galvanized iron mountings, and there is, it is stated, nothing to get out of order or to break.

Frank Grim has opened a new Tinware store at Sharpsburg, Md.

J. M. Hoefer & Son, dealers in Hardware, Stoves, Farming Implements, Sporting Goods, &c., Kildare, O. T., has been succeeded by Watts & Harper.

U. G. Fowler has succeeded U. G. Fowler & Co. in the Hardware, Stove and Sporting Goods business in Huron, S. D.

Geo. H. McCrea is the proprietor of a new store in Chewelah, Wash. Mr. McCrea handles Shelf and Heavy Hardware, Stoves and Tinware, Agricultural Implements and Sporting Goods.

John P. Ackerman has lately opened a store at Monaca, Pa., handling Shelf Hardware, Stoves and Tinware and Sporting Goods.

A disastrous fire, which visited the town of Houlton, Maine, on Saturday, May 17, destroyed the Stove store of C. F. Thorn.

The Wagner Mfg. Company, Sidney, Ohio, have recently installed at their factory a new power plant consisting of a 150 horse-power engine and boiler. The company are making a number of other improvements in their plant. They report that their new Aluminum foundry is running satisfactorily and turning out the full capacity of production.

The Blacklock Foundry, South Pittsburg, Tenn., have made an addition to their foundry, and put in a new cupola and blower, by which their capacity is doubled. Their lines of manufacture are Sinks, Sad Irons, Stove Hollow Ware, Sugar Kettles, Grate Fronts and general Foundry Castings, the first four named being specialties. Business last year was very satisfactory. This year so far has not been so favorable, but present indications are that on its termination the total will be larger than that of 1901.

St. Louis Enameling Company, St. Louis, Mo., issued a circular calling attention to their line of Enameled Steel Signs. These Signs are said to be practically unbreakable and require no polishing or cleaning. Originality in design and lettering can be embodied in an attractive and effective manner, and the cost is said to be on an economical basis. Many Signs of general demand in office and factory are kept constantly in stock. A special department is also conducted with every facility for prompt execution of orders for enameling of all varieties of specialties.

DEATH OF SAMUEL L. MALCOLM.

The news of the sudden death of Samuel L. Malcolm, at his home in New York City, on the afternoon of Saturday, May 17, at the age of 61 years, will be received as a shock by the plumbing trade, owing to his wide acquaintance with plumbers throughout the United States and the firm friendships established by his kindly nature and the cordial greeting which he gave to all who came in contact with him. Mr. Malcolm attended a meeting of the local master plumbers' association last Friday and died the following day, at his home, 313 West 112th street, without any intimation of serious illness, passing away quietly from heart failure while one of his daughters was reading to him.

He was born in Lebanon, N. Y., June 1, 1842, and was the head of the plumbing firm of Malcolm & Taylor, at 626 Sixth avenue, New York City. Mr. Malcolm had been prominent in plumbing circles for a number of years, taking an active interest in trade protection and lending his assistance in all efforts to that end. He filled different offices in the master plumbers' association in his city and had been honored by being its president. He had also been a delegate to the conventions of the National Association of Master Plumbers for a number of years and won the confidence of the members all over the country by his sagacity and conservatism in its councils. When the convention of the National Association was held in New York on June 17, 1897, Mr. Malcolm was elected vice-president, and at the National convention at San Antonio, Texas, on April 15, 1898, he was elected president of the body. As ex-president, his counsel was always sought by those who directed the affairs of the National Association after his retirement.

SAMUEL L. MALCOLM.

Mr. Malcolm was a veteran of the Civil War, a Free Mason and a member of a number of societies and charitable organizations. He is survived by a wife and five grown children. The funeral services, which were held at his late residence in New York City last Tuesday evening, were attended by a large number of the members of the master plumbers' associations of New York and adjacent cities.

Alfred H. Gilby has been appointed Inspector of Plumbing by the Health Board of Bellville, N. J.

CALL FOR THE ANNUAL CONVENTION OF THE NATIONAL ASSOCIATION OF MASTER PLUMBERS.

Under the date of May 15 President E. D. Hornbrook has issued the following convention call to the members, State and local associations affiliated with the national body:

The twentieth annual convention of the National Association of Master Plumbers of the United States will be held in the Auditoroum on the Steel Pier, Atlantic City, N. J., June 17, 18 and 19, 1902.

The opening session will be called to order at 10 o'clock on Tuesday morning, the 17th.

The New Rudolf Hotel will be headquarters of the National Association.

The letter of April 19, 1902, sent you from the National Executive office gave hotel rates, instructions as to the election of delegates and inclosed blank form on which to report delegates and alternates to this office as soon as elected—an item of importance that should be attended to promptly.

Arrangements are about completed whereby the Western Passenger Association, Central Passenger Association and Trunk Line Association will make rate of a fare and one-third for the round trip on the certificate plan for those attending the convention, and secretaries of local associations will be advised more fully as to this matter a little later, when all details are made up.

The Atlantic City convention will be the most important in point of attendance and interest yet held by the National Association, and no local organization or would be down to date master plumber can afford to miss it. Remember you will be admitted to the Auditorium on the Steel Pier, where the convention sessions are to be held, whether delegate or not, and entitled to all privileges in the way of hotel and railroad rates.

The fact that we meet this year in Atlantic City, one of the most delightful seaside resorts, should insure an unusually large attendance, and it is hoped will produce an enthusiastic interest in the work that will reach the extreme of our membership.

All local, district and State organizations should see to it that their full quota of delegates are elected and present at the convention. The important item to be considered is the Cleveland Resolutions, which are universally considered the most effective yet adopted for our mutual benefit.

The National Association of Master Steam and Hot Water Fitters will meet in Atlantic City, June 12 to 14, the week preceding our convention, and our delegates can attend both gatherings if they choose to go early. The bathing, which is always the best, will hold good during the interim of the two conventions; so will hotel and railroad rates.

Everybody to Atlantic City this time.

The Independent Practical Boss Plumbers' Association.

As a result of the strike in the plumbing trade in Bloomfield and Montclair, N. J., the Independent Practical Boss Plumbers' Association was organized at a meeting held in Cranley's Hall, Montclair, on Saturday night, May 17, with 19 members of the trade in attendance. After discussing the matters of contention in the strike and agreeing that the plumbers should be allowed to work for anybody who was willing to pay them the union wage scale, the work of organization was perfected. Officers were elected as follows:

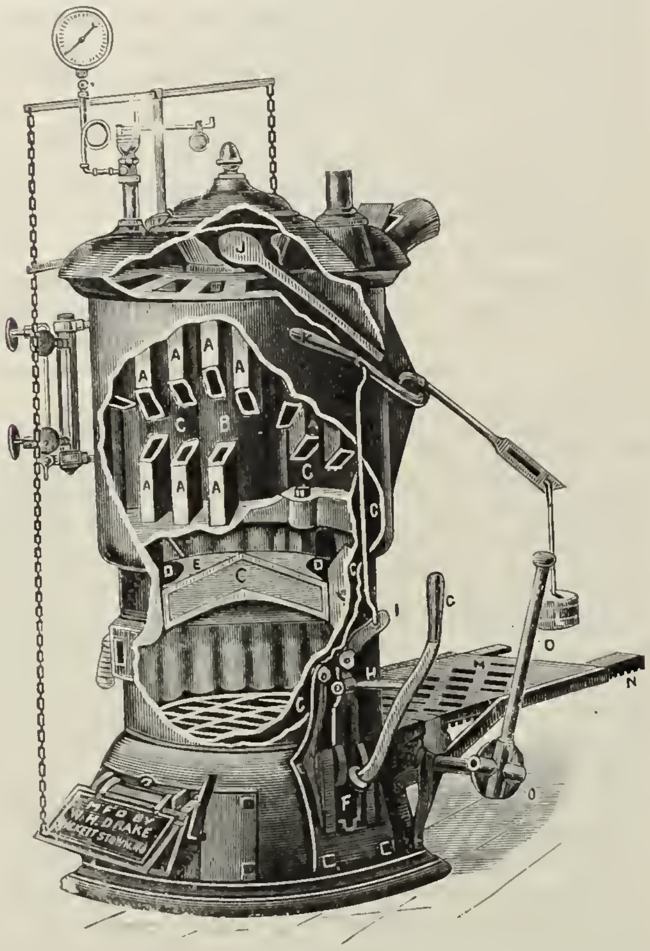
President, John Stanford, Bloomfield.
Vice-President, John Kaveney, Montclair.
Treasurer, Raymond Keisted, Upper Montclair.
Secretary, William Crystal, Montclair.

The following Executive Board was also named: George Gasser and John Meyers of Montclair, and John Stanford of Bloomfield.

Frank C. Van Scoy, plumber, has removed his place of business to 53 South Main street, South Norwalk, Conn.

The Torrid Fine Coal Boiler.

An illustration is presented herewith showing a broken view of the Torrid boiler especially designed for burning fine coal, which is made by W. H. Drake, 36 Clinton street, Newark, N. J. These boilers have been used by the trade for the usual grades of coal for some years, and have established a fine reputation for efficiency and economy. The construction provides for a large amount of surface against which the water lays and against which the products of combustion play in passing through the smoke outlet. The special feature of the new boiler is its arrangement for burning fine coal. The boiler is of the self feeding type, having a coal reservoir through the center. It is claimed that, by a simple adjustment of the grate levers, the fuel is delivered to the fire chamber automatically. The grate will hold the bed of the fire at a uniform depth sufficiently thin to admit air so as to burn fine fuel and yet keep the fire alive and free from ashes. A cut off slide is provided at the rear and so arranged that, by means of levers, it can be passed through the fire box between the live coal and the ashes, thus separating them, when the grate can be turned and all the ashes and cinders discharged into the ash pit, keeping the fire intact, after which the slide can be removed and the grate brought up to the bottom of the fire. It is claimed that the boiler will feed and burn buckwheat coal successfully and without constant attention. Circulars giving full particulars of this boiler can be secured on application. It is made in three sizes, with 15, 18 and 22 inch grates and rated to carry 300, 450 and 650 square feet of direct steam radiation.



The Torrid Fine Coal Boiler.

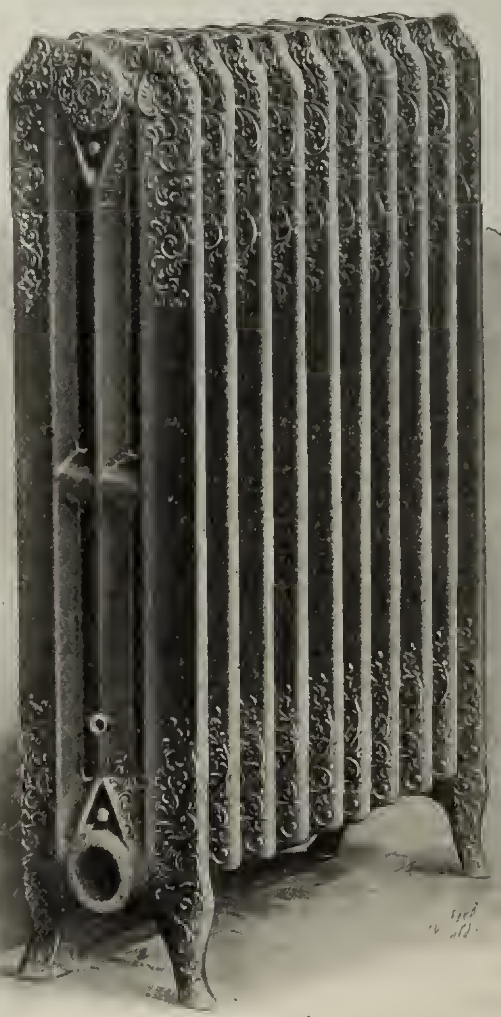
Feed Water Heater Catalogue.

The Whitlock Coil Pipe Company, Hartford, Conn., are issuing a very attractive catalogue of 30 pages devoted to the American Standard copper coil feed water heater. The first cover bears a design in black, green and gold on a dark background, and the catalogue is printed in two colors. Half-tone engravings show general views of the heater, and also the specially constructed coils of copper used in them and the method of connecting the steam supply with the coils through the shell of the heater. The heaters are made in 25 sizes, from 5 to 3000 horse-power capacity. The method of connecting the primary and auxiliary feed water heaters for condensing steam plants is shown by means of illustrations. The catalogue also contains a long list of those who are using the American feed water heaters, and gives the number of horse-power they are taking care of. The closing pages are devoted to useful information, showing the saving of fuel obtained when a good feed water heater is used. Accompanying the catalogue are two little circulars, one devoted to the American exhaust head and the other to the American steam separator.

The New York Radiator.

The latest candidate for the favor of the heating contractor in the radiator field is the New York radiator, made by the New York Radiator Company, Utica, N. Y., with branch office at 235 Water street, New York, and 79 Lake street, Chicago, Ill. The New York Radiator Company are erecting what they claim to be the most complete radiator plant in the United States at Utica, N. Y., for the manufacture of the entirely new line of steam and water radiation shown herewith. The patterns of the two and three column steam and water radiators are completed and radiators are now being constructed. The machinery for equipping the new plant is on the ground, and the new buildings, which are being substantially constructed of brick and iron, will be completed so that the plant will be in operation about July 1. The company state that they will be in a position to furnish two and three column radiation in all hights for steam and hot water, in ornamental and plain surface, in August.

In these radiators beauty of design has been combined with great strength and uniform thickness, giving full efficiency, together with the full amount of claimed surface, and in the three-column radiator the objectionable feature of unsightly bolts in plain view has been avoided. Having unlimited facilities for manufacturing, combined with the latest and most improved machinery, an ample and competent staff, under the supervision of an experienced radiator superintendent, the company are in a position to produce goods that will be attractive in design, ornamentation, construction and efficiency.



The New York Radiator.

Plumbers' Essay Committee's Request.

The following letter is being sent by M. W. Manwaring, 519 Washington avenue, Bridgeport, Conn., chairman of the Essay Committee of the National Association of Master Plumbers, to the officers of local and State associations:

Will you kindly solicit from your membership short essays upon subjects of interest to the National Association.

While not confining the writers to these, we would suggest as subjects the following:

1. Future of the master plumber.
2. Trusts, effect upon our trade (non-partisan from a business point of view).
3. Necessity of a more thorough organization of the trade.
4. How can our membership be increased ?
5. How should the plumbing business be conducted to be most successful ?
6. Is the present system of credits for the interest of the trade ?
7. Why is subcontracting detrimental to the plumber?
8. Why is the publishing of net prices and discounts hurtful ?
9. Is the present plan of organization of the National Association conducive to the best interests of all sections ?

If you can assist our committee in securing something to present to the coming convention at Atlantic City you will greatly oblige the committee.

Bathtubs for Royalty.

Royalty has come to Pittsburgh for her bathtubs and sanitary apparatus, says the *Times* of that city. The royalty includes Russia, Italy and England, and within the next few months the members of the royal families of the last two mentioned will take their baths in tubs made in Pittsburgh. The tubs will be the product of the Standard Sanitary Mfg. Company and altogether the orders amount to a considerable sum.

The order from Russia is for all the tubs, sanitary and operating room fittings that will be used in a maternity hospital that is being erected at St. Petersburg by the Empress of Russia. This hospital, which will be copied after the famous maternity hospital in New York, will be the most magnificent institution of its kind in the world, and its total cost will be over $1,000,000. The Empress is paying for it out of her private purse and sent her personal representative to this country to contract for the fittings. He was met in New York by Francis J. Torrance, who brought the contracts with him to Pittsburgh. The contracts are for tubs, showers, lavatories and fittings for the operating rooms, and all will be made of the finest porcelain enameled iron. The contract will amount to about $35,000.

The order from England is only a small one, but it will amount to a considerable sum. It is for six bathtubs that will be installed in Buckingham Palace, the home of King Edward VII, and they will be of the finest quality that the local company can produce.

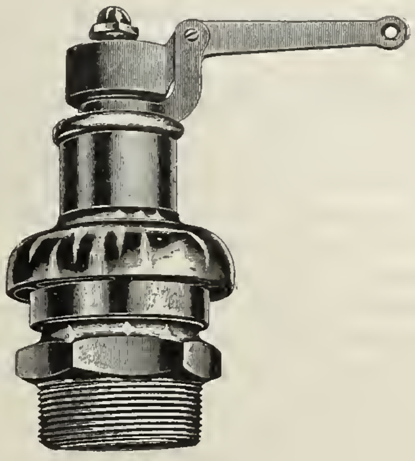
The order from Italy is a personal one from the King for five bathtubs. They are to be installed in the royal palace at Turin, and will also be of the finest quality. The three contracts will amount to nearly $50,000.

The National Radiator Company's Catalogue.

The first catalogue issued by the National Radiator Company of Johnstown, Pa., since they became the successors of the Fowler Radiator & Mfg. Company, has just come to hand. It is a very attractive piece of trade literature, and consists of 24 pages, bound in a dark green cover, upon which a design is worked including sections of the company's three-column Solus radiator. This radiator is made in two and three columns and with either high or low feet as desired. The catalogue shows cuts of radiators curved to suit bay windows, as well as window radiators, stair radiators and dining room radiators, with warming closet. The Solus is also made as a semidirect radiator, with a box base to suit, equipped with dampers for regulating the air supply. Several pages are devoted to the Imperial wall radiator, which can also be assembled as a low window radiator. The text fully explains their merits and gives the various hights in which the radiators are made and the sizes of air supplies best adapted for semidirect heating, and also the size of connections provided for both steam and hot water.

Safety Valves for House Heaters.

Having made a specialty of the construction of safety valves for house heaters, the American Steam Gauge & Valve Mfg. Company of Boston, Mass., have recently put on the market some new valves, shown herewith, which have met with favor from the manufacturers of boilers for house heating apparatus. In Fig. 1 is shown a new pop safety valve with a combined cap and top lever, constructed in the same manner as safety valves for high pressure, which is not usually the case with low pressure house heater safety valves. This valve discharges downward, preventing the dirt from lodging in the valve casing, although it can be made to discharge upward if preferred.



Safety Valves for House Heaters.—Fig. 1.—New Pop Safety Valve.

Fig. 2 gives a sectional view of another safety valve which is furnished without a lever and constructed on the same principles as high pressure safety valves, although it is not intended to work under higher pressure than 30 pounds. The construction and operation of this valve is readily noted from the sectional view presented. A large cap covered set screw at the top regulates the pressure at which it will blow off. Fig. 3 is a spring valve and not a pop valve, but it operates the same as the ball and lever safety valve which is now being discarded by some boiler houses. This valve is not so slow to open and closes quicker after relieving the boiler to a very small amount. This valve has been thoroughly tested by boiler manufacturers and has come to be preferred by a large number of them.

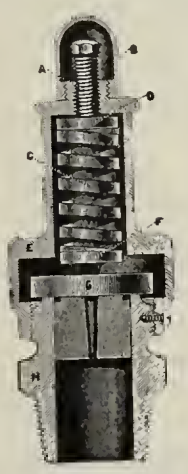


Fig. 2.—Sectional View of Safety Valve.

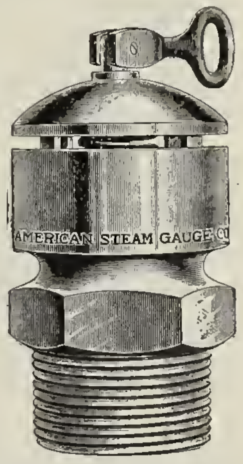


Fig. 3.—A Spring Safety Valve.

Tests on Heating with Radiators in Window Recesses.

BY CHARLES F. HAUSS.

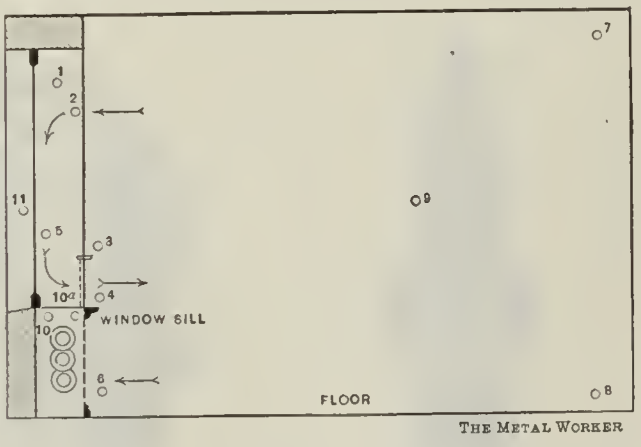
Some tests have recently been made to determine the temperature in different parts of a room heated by radiators set under the window seat to determine the necessity of using diaphragms or dampers to direct the current of heated air as it leaves the radiator and to know what direction the air currents travel in.

In cases where the radiator is placed near an inner wall the travel of the air is relatively simple. The heated air rises first to the ceiling, where it spreads, then falls at or near the cold walls, especially at the windows, where it drops to the floor, whence it returns to the radiator. Besides these main currents there are the lesser currents that diffuse the heat, bringing it in contract with the vertical currents near the center of the room, which under good conditions—that is, if the cooling surfaces are not too great—give a very small difference in temperature between the middle of the room and the surrounding walls.

Now there is another problem—namely, the setting of the radiators in the window recesses—which promises at the outset different air currents and distribution of heat. The setting of radiators under the windows is preferred in hot water or steam heating, in view of the fact that this is the wall space not needed for furniture of any kind, besides being the most rational place to set the radiator to prevent cold drafts from the windows. Little has been printed on this subject that would be instructive, hence the following tests made by Professor Esmarch of Göttingen * will surely interest the heating engineer.

The room in which the tests were made is of medium size, being 14 feet long, 16 feet deep and 12 feet high. It has two windows in the outside wall, which faces the east, the windows being 8 feet high and 4 feet 3 inches wide. The wall is of solid brick 18 inches thick. The three other walls divided this room from other heated spaces, hence any loss of temperature through them was improbable. Under this room was the kitchen, which was also heated, as was the room above, so that the loss of heat to these was cut of the question.

The conditions in this case can be looked upon as favorable, and the only losses to be considered are those through the windows, which were single sash with double glass—that is, the outer stained glass set in lead and the inner being plain glass, with a 5-16 inch air space between them.



THE METAL WORKER

Tests on Heating with Radiators in Window Recesses.—Fig. 1.—Elevation Showing Arrangement of Window Radiator and Thermometer.

The radiating surface was set as mentioned before in the window recesses, and was composed in each case of three lengths of gill pipe, or extended surface. The recesses were 53 inches long 8½ inches deep and 32 inches high, covered on top and front with perforated iron screening. The hot water with which the radiation was warmed seldom exceeded 158 degrees F., even in coldest weather, and ranged mostly between 120 and 140 degrees F.

The temperature was measured on ten standard thermometers, large enough to permit the easy reading of fractions of a degree, and were arranged as shown in Fig. 1 and as follows:

Thermometer.

1. Hung in the upper part of the window recess, and was separated from the room by a curtain 16 inches away.
2. In the middle of the window just under the curtain mentioned.
3. Was used only in test No. 4, and was set immediately above the draft shield, that was not used in the first three tests.
4. Just over the inner top edge of the casing or sill, the bulb being about 1¼ inches from same.
5. Was about 3¼ inches from the window and 16 inches above the window sill.
6. Before the recess, 1¼ inches over the floor.
7. In a corner of the room opposite to the window and 6 inches from the ceiling.
8. In a corner of the room opposite to the window and 1¼ inches from the ceiling.
9. In the middle of the room and about head high.
10. In the recess, close to the upper perforated screen and near the window.

10a. In the same horizontal line, but nearer to the room.

11. Just outside the window.

Finally the finer air currents were found with cigar smoke, which, when carefully used, will show them accurately enough for all practical purposes.

The first test was made on a clear, quiet, frosty day about 8.30 p.m. The heat had been turned off the radiator about an hour, yet the water in it was about lukewarm, as indicated by thermemeter 10 just over the radiation. Thermometers 4 and 5 record the lowest temperatures, for the reason that the cooled air of the room drops rapidly at the window, then passes out horizontally, as indicated by the arrow near thermometer 4, mixing with the warm air from the radiator as it returns to the middle of the room.

Most of the cooled air from the room naturally enters the radiator recess at the floor. Its velocity increases as the temperature of the radiator rises, which is also the case at thermometer 2, due possibly to the fact that the outside air was very cold. The air that streamed into the room horizontally at 4 feet could be followed with smoke distinctly about 3 feet, when it seemed to dissolve into numberless smaller streams that could not be traced. This, of course, holds good only when there is no wind. When there is strong wind blowing this horizontal stream can be distinctly traced about 7 feet. Otherwise the circulation of air in the room is generally the same in all the tests—that is, a more or less rapid travel of the air into the recess at top and bottom—a mixing of the two differently tempered streams of air immediately over the radiator, and then a horizontal return into the room, with more or less rapid mixing of the air in the room. A remarkable thing is the evenness of the temperature of the room in its different parts, in horizontal as well as vertical direction. Except for the low temperature shown at the window and the high temperature shown just over the radiator, the different thermometers vary hardly more than 2 to 4 degrees, whether they are near to or far from the windows, on the floor, head high or near the ceiling. This result must be credited partly to the protected location of the room, partly to the low temperature of the source of heat, and, finally, to the excellent location of the radiator.

After the temperatures were recorded the heat was turned on the radiator, and at the same time the rolling outside shutters were closed. Naturally this protected the windows from cold, and thermometer 11 on the outside at once showed a rise from 8.6 to 21.2 degrees F. Despite the strong wind blowing when the second test was made this same rise occurred in thermometer 11. After one hour of heating the temperatures were taken again. The effect of the heating was plainly apparent, as every thermometer showed a rise, especially thermometers 10 and 10a. The fact that thermometer 10 showed lower than thermometer 10a was explained by the smoke from the cigar, which in descending at the window did not all turn out horizontally, but part of it forced its way through the top screen. This current of air was distinctly traceable in all the tests. It may be well to remark here about the stagnant warm air

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*For the *Gesundheits Ingenieur*, No. 18, 1901.

around thermometer 1, which was only separated from the room by a cloth curtain.

The third record of temperature was taken 35 minutes later, but outside of a small increase in warmth there was no change from the record shown in test 1b in Table A.

Table B.

Test.		Time.	1.	2.	3.	4.	5.	6.
			Thermometer number.					
5	a	9	61.5	69	64.4	64.4	62.6	63.5
	b	9.30	62.6	96.8	97.6	91.4	72	75
	c	9.50	68	99	96	88	73	70
	d	10	68	100.4	96.8	89.6	72	70
	e	10.30	63.5	87	87.8	87	64.4	65

Table A.

Test.		Time.	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	10a.	11.
			Thermometer number.											
1	a	8.30 p.m.	69	67	..	63	63	68	71.6	68	69	80.6	..	8.6
	b	9.40 p.m.	69.8	71.6	..	70	67	69.8	73.4	69	72	95	107	21.2
	c	10.15 p.m.	72	74.6	..	71	70	70.6	75.2	69	74	96.8	109	21.2
2	a	10 a.m.	61	63	..	60.8	60.8	63.6	67	65	67	89.6	100	12.2
	b	10 p.m.	76	76	..	86	77	71.6	73.4	69.8	73.4	91.4	122	23
3	a	9 a.m.	62.6	63.6	..	61	60.8	62.6	66	63	66.2	63	63	19.4
	b	9.45 a.m.	63.6	65	..	63	62.6	64.4	68	66	67.4	86	94	19.4
	c	10.45 a.m.	67	68	..	66.2	65	67.8	69.6	67	69.8	95	106	20.2
4	a	4.45 p.m.	65	66.2	64	..	62.6	63.6	69	67	68	60	61	35.6
	b	6.30 p.m.	65	65	63	..	60.8	62.6	69	67	68	60	61	33.8
	c	7.30 p.m.	75.2	76	78	..	69	68.5	73.4	68	70	107.6	98.6	42.8
	d	10.30 p.m.	70	70	68	..	65.6	67	71.6	68	70	65.6	66.2	43.6

A second test was made on the following morning at 10 o'clock, when a brisk east wind was blowing hard directly on the windows. The outside temperature was 12.2 degrees F., hence the loss of heat through the windows must have been much higher than on the night before.

The radiator valve was about half open, the temperature of the radiator 122 degrees F. The circulation of air as indicated by the cigar smoke was precisely the same as in the first test except that it was more rapid, and was noticeable about 5 feet from the window, in the form of a draft, which was much reduced by placing a tightly rolled cloth at the bottom of the warped and poorly fitted window, when also the temperature of thermometer 4 increased 11 degrees F. The second reading of the thermometers was taken at 10 o'clock p.m., after the aforementioned roller shutters had been closed.

The radiator valve was not changed, but the water temperature increased considerably, which naturally increased the velocity of the air, which is best illustrated by the high temperatures of thermometers 5 and 6.

The third test was made one week later. There was no wind blowing, outside temperature 35.6 degrees F., and the radiator valve practically closed and radiator just lukewarm. Only a small amount of air enters the recess at thermometer 6, and leaves at thermometers 10 and 10a, at which the temperature was alike.

Otherwise there is the same circulation of air as in the former tests. The horizontal current could be traced with the smoke about 4½ feet into the room, and can be felt equally as far, due possibly to the lack of hot air being added, as indicated on thermometer 4. Now the heat was again turned on, and after one-half an hour the result was read off, as shown in Table A, at 3b. After another hour the results shown in 3c were recorded, which are about the same as those shown in the previous tests.

The appearance of draft mentioned suggested the use of a shield or protector, so a glass window shield about 24 inches high was placed just in front of the top screen of the radiator casing or sill, which was about 12 inches from the sash and closely fitted the window casings at the sides. This shield is shown in Fig. 2, and answered the purpose of stopping the drafts.

The fourth test was made in thawing weather with a light southerly wind blowing, after the heat had been turned off the radiator for some time. With the use of the shield it was found that the cold air dropping at the windows passed all the way through the radiator recess when the heat was turned off and passed out onto the floor, as was plainly shown in the temperatures of thermometers 5 and 10 in test 4, which was made at 4.45 p.m.

A second reading was made one and three-quarters hours later, and at the same time the radiator valve was opened and the shutters closed. After another hour the third reading followed, which showed that the direction of the air currents had changed, but I refer to the last test for a clearer explanation of this. After the third reading, 4c, was taken the radiator valve was closed again, and after three hours, the radiator being cold, the cooler air that descended at the windows again passed through the radiator recess and out upon the floor, as mentioned at the beginning of test 4.

Finally, a last test was made with the shield, as shown in Table B and Fig. 2, when only six thermometers were used and placed as shown in Fig. 2. Besides this a diaphragm of cardboard 18 inches high was fitted into the window recess so as to evenly divide the space between the shield and the window, the top of this diaphragm being level with the top of the shield, leaving 6 inches between the bottom of the diaphragm and the window sill.

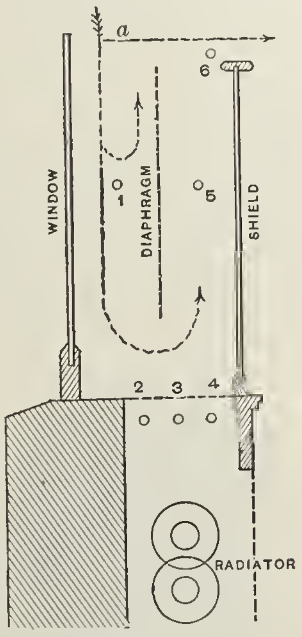


Fig. 2.—Window Arranged with Shield.

The object of this is plain, to induce the cold descending air to drop to the radiator and be carried back with the ascending current of warm air on the inner side of the diaphragm past thermometer 5 in Fig. 2.

The test was made on a frosty day, very little wind and outside temperature 28 degrees F. Heat was turned off and the temperatures were read, then heat was again turned on, and the four other readings shown in Table B were taken.

Smoke blown against the window showed that soon after turning on the heat there was a lively current rising up past thermometer 5 that mixed with some of the cold air *a* at thermometer 6 and passed in a slightly rising horizontal line into the room over the shield, yet there was no draft felt even near the windows.

Of the air dropping toward thermometer 1 about one-half went as described toward 6, the remainder went on down toward the sill, where part of it went up past 5; the rest in the process of mixing with the rising warm air returned up channel 1, as indicated on Fig. 2.

When the diaphragm was shifted to within 2¾ inches of the window all the air that reached the channel in which thermometer 1 was placed continued on down to the sill and came up again in channel 5, but the parting at *a* and the current that passed horizontally at 6 continued.

When the diaphragm was removed smoke tests showed that the most of the cold air dropped to the sill, then turned and rose past thermometer 5 and mixed with the rising warm air. The diaphragm apparently was of no benefit, at least not under the conditions of this test.

In conclusion it may be well to remark, tersely, as follows: A hot water radiator set in the window recess will, even under the worst conditions, give entire satisfaction, as evidenced by the remarkably even temperature in all parts of the room. The circulation of air in the room is different than in hot air or stove heating, in that there is an energetic mixing of the cold with the warm air in the recess, and an entire absence of a cold zone on the floor. The appearance of draft on a level with the window sill can be avoided by the use of the shield mentioned, or where the windows are either double sash or especially tight single ones there need be no sign of draft from this source. Any special direction of the air currents by diaphragms seems unnecessary.

Noppel Force and Suction Pump.

Noppel Pump Company, Hartford Trust Company Building, Hartford, Conn., are manufacturing the Noppel plumbers' pump, here illustrated. Fig. 1 shows one form of the pump, Fig. 2 representing a similar pump, but with additional features by which to accomplish similar results in other ways. These pumps are designed for clearing out obstructions of grease or other impediments in pipes connected with sinks, basins, bathtubs, closets, urinals, &c., without scratching or otherwise marring the fittings. In cleaning out obstructions in the waste pipes referred to no connection is needed other than to screw onto the neck of pump a suction cup provided for that purpose and place the cup over the outlet of the bowl, holding it there firmly. The water should be allowed to run into the basin until it covers the other opening in the pump (see Fig. 1), at the bottom of the right hand side. The handle of the pump should then be turned to the left as far as it will go and pulled up. This fills the pump cylinder from the water in the basin. The handle should then be turned to the right as far as it will go and forced down and pulling it up as far as possible, keeping the handle turned to the right. This forces the water drawn from the basin against the obstruction and sucks it out again. After a few strokes the handle can be stopped at the end of the upward stroke, when the handle can be turned to the left as far as it will go and pushed down, thus discharging what has previously been drawn up. There should then be taken in a fresh supply of water or solution of chlorate of lime, which acts as a solvent with grease, and pulling the handle up again, turn to the right as far as it will go and renew pumping up and down vigorously. It is said that it is seldom necessary to repeat the operation, as usually by this time the obstruction has been opened up so that the water the operator is pumping in is running through the pipe before it can be drawn back again. Where it is necessary to exert more force the suction cup can be taken off and put on the neck of the pump, on which it is screwed through the hole in the foot rest, and the pump fastened with the nut provided. The brass nipple is then screwed on and a rubber hose long enough to reach from the pump to the outlet in the basin attached. On the other end of the hose can be fitted the male nipple, to which should be screwed the cup. A short hose connected with the opening in the base of the pump should be allowed to lie in a pail holding the water or solution and standing conveniently near, as illustrated in Fig. 2. The pump is then ready for operation as before, but without the necessity of filling the bowl or basin with water, although if the pipe is completely clogged it is always advisable to allow the water in the faucet to run until the pipe is filled from the obstruction to the intake. When it is more convenient to operate on the end of the pipe or some part of the plumbing other than the waste pipe entrance the operation is the same as last described, but one of the rubber plugs which are furnished, fitting pipes from ¾ inch to 3 inches in diameter, is screwed onto the male nipple in place of the cup and forced into the opening to make a tight joint. It will thus be seen that this pump acts both for force and suction work.

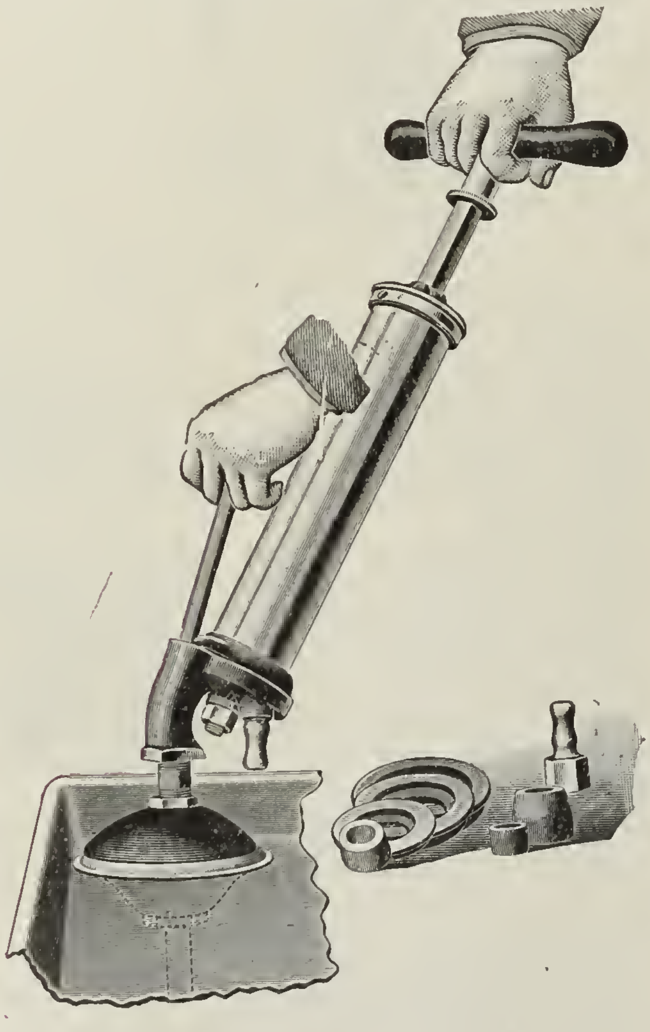


Fig. 1.—Noppel Force and Suction Pump.

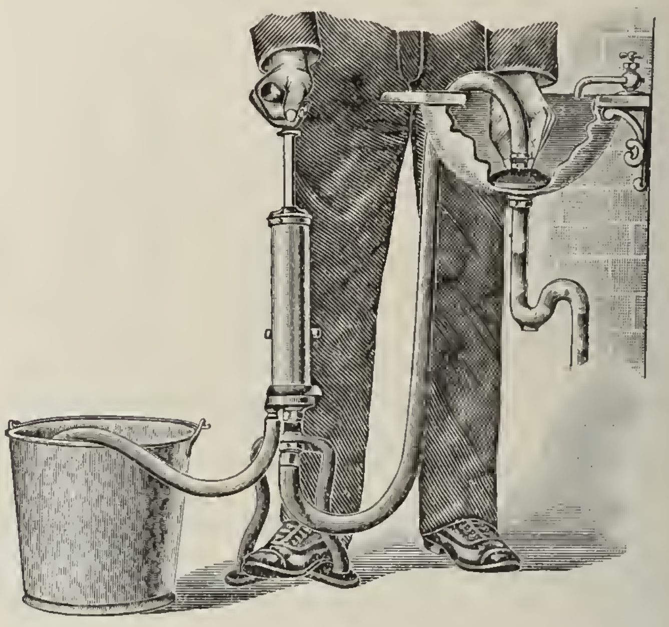
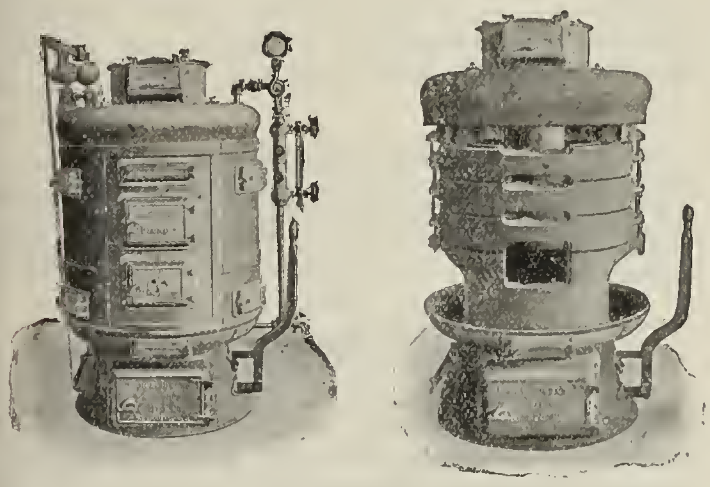


Fig. 2.—Another Method of Using the Pump.

The Vance Boiler Works, Geneva, N. Y., are now occupying the new plant which they have built for their special purposes. The works are located at Gates avenue and Ontario street, and are close to the tracks of the New York Central and Lehigh Valley railroads. The main building is 50 x 200 feet, two stories high, constructed of wood and brick, and will be used for machine and boiler shops. A fine equipment of machinery, which includes a compressed air plant for riveting, power presses, &c., is being installed. A warehouse connected with the main building is in process of erection. Office facilities, conveniently provided in the main building, are ample for the requirements of a largely increased sale of the Vance Boiler. An area of 2 acres is comprised in the site purchased by the Vance Boiler Works, and will be ample for future extension as that becomes desirable and necessary.

The Improved Florida Boiler.

The Pierce, Butler & Pierce Mfg. Company of Syracuse, N. Y., are now placing on the market the Improved Florida boiler, shown in the accompanying illustration. This boiler is constructed of horizontal sections and is circular in form, having a magazine feed directly over the center of the fire. Each section is provided with corrugations and projections to increase the heating surface and extending almost to the magazine, which is a separate casting, so that every portion of the water section is entirely surrounded by hot gases. The construction provides four return flues and three waterway openings, the different sections being connected by extra heavy cast iron push nipples. The fire pot section is smaller in diameter than the water sections which rest upon it. The fire varies from 10 to 15 inches in depth, according to the size of the boiler, and the fuel slopes from the magazine toward the sides. The base is of ample hight to allow a free circulation of air under the grate and to accommodate a quantity of ashes. It is provided with a draft door adapted for connection with an automatic damper regulator, and it supports a grate constructed with interlocking bars and so arranged that it may be dumped. A cast iron casing is provided to insure the durability of these boilers.



The Improved Florida Boiler.

When this boiler is arranged for hot water heating it is designated as the Improved Tropic, and is identical in construction with the Improved Florida, except that the waterways are considerably larger. The boilers are made in 15 sizes, with fire pots ranging from 16 to 32 inches in diameter. They are rated to carry from 250 to 1250 square feet of direct steam radiation, and from 400 to 2075 square feet of direct hot water radiation.

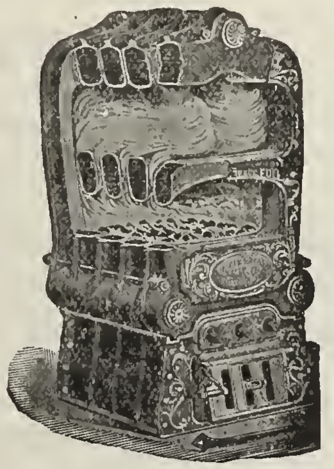
Capitol Boilers.

The United States Heater Company of Detroit, Mich., with branch offices in New York, Chicago and Philadelphia, are sending to the trade a handsome edition of a catalogue devoted to the Capitol boilers. The work is printed on fine paper, bound in a green cover with a red silk cord, and has a picture of the National Capitol with the words " Capitol Boilers " on the front page. A view of the manufacturing plant of the company is given as a frontispiece and the introduction calls attention to the "98 Series" of Heavy Duty Capitol boilers, which are of the vertical sectional type, with an auxiliary crown sheet exposing a large amount of fire surface. The flues are so arranged as to secure a long fire travel, and the sections are connected by means of cast iron slip nipples. The waterways are arranged to facilitate circulation and allow the steam generated to pass to a steam drum without hindrance, so that dry steam is provided.

The hot water boiler is of the same general construction except that the top header is much shallower. The boilers are shown both in general views and by means of broken views, so that the construction and fire travel can be readily understood. Pictures of the different sections and also of the grate and ash pit are presented. Two pages are devoted to tables showing that these boilers are made in 14 sizes adapted for hard and soft coal or wood, and rated to carry from 350 to 2750 square feet of steam radiation. Accompanying the catalogue is a four-page circular devoted to the Capitol-Mascot, a boiler which has been on the market for a number of years and has gained a popular reputation.

The New Walker Boiler.

The accompanying illustration presents a broken view of the new Walker boiler, made by the Walker & Pratt Mfg. Company, 31-35 Union street, Boston, Mass. This boiler is of the vertical sectional type, having an auxiliary crown sheet exposing a large amount of surface to the direct radiant heat of the fire. The construction also provides for a long fire travel before the burning gases find their escape to the chimney. The waterways in the boiler are arranged to facilitate a free circulation and to permit the ready liberation of the steam generated from the water, so that dry steam may be supplied to the heating mains. The sections are connected by means of malleable iron tapered push nipples, which are copper coated. The copper coating forms a slightly yielding surface which conforms exactly to the accurately reamed holes in the sections, making a tight joint and affording protection. The different sections, when assembled, are designed to rest on a substantial base in which a labor saving grate is provided, either of the triplex character or of the rocking type. The boilers are made with 17, 22 and 32 inch fire boxes, and in 21 sizes, rated to carry from 400 to 4500 square feet of direct hot water radiation and from 240 to 2700 square feet of direct steam radiation. It is claimed by the makers that all boilers are thoroughly tested under a pressure of 100 pounds, and also that the ratings may be relied upon. In using the ratings, the flow and return pipes of heating systems must be considered as radiating surface. The company issue a new catalogue of 12 pages, devoted to a detailed explanation and giving tables of the dimensions of this boiler.



The New Walker Boiler.

The United States Radiator Company's Expansion.

At a meeting of the Executive Committee of the United States Radiator Company, Dunkirk, N. Y., it was decided to build a second plant, equal in size to the present one, which is now yearly paying out $150,000 in wages, shipping 2400 carloads of radiators and melting 14,000 tons of iron. At present 267 men are employed. Fully 100 more would be engaged if they could find homes in Dunkirk, but there are no more houses.

Three cities, besides Dunkirk, are working for the new plant. As all the available ground on the present site is taken, the duplicate plant must be built on a lot in another part of Dunkirk if that city is to have it. Whether or not the new plant is built there near the present one remains to be seen.

Seaman & Merkle, Fleetwood, Pa., have added a plumbing branch to their business. They have a number of contracts in hand.

ASSOCIATION NEWS.

Tennessee Master Plumbers.

The annual convention of the Tennessee Association of Master Plumbers was held at the Tulane Hotel, Nashville, Tenn., on May 10. After transacting the regular business of the association the following officers were elected for the ensuing year:

President, Fred. Fox., Jr., Chattanooga.
Secretary, R. O. Carlin, Chattanooga.
Treasurer, P. J. Kane, Nashville.
Delegates to the National Convention, Thomas J. Mooney and P. J. Kane.

The delegates were entertained by a dinner and theater party.

New Haven Master Plumbers.

The Master Plumbers' Association of New Haven, Conn., at their annual meeting on Monday evening, May 12, elected the following officers for the ensuing year:

President, C. E. Coe.
Vice-President, Thomas L. Routh.
Corresponding Secretary, H. B. Bushnell.
Recording Secretary, J. F. Campbell.
Financial Secretary, E. R. Tierney.
Treasurer, T. W. Corbett.
Sergeant-at-Arms, C. E. Coe.
Delegates to the National Convention, P. F. Connelly, S. E. Dibble and T. W. Corbett.

The association now numbers between 35 and 40 members, with a number of applications under consideration, and is in better condition than it has been for several years.

At a meeting of the Master Plumbers' Association of East St. Louis, Ill., T. J. Kickham, William Thrasher and F. G. Turner were elected delegates to represent the East St. Louis Association in the National Convention, which meets in Atlantic City in June.

Already there is evidence that Atlantic City is to prove a popular convention city so far as the master plumbers are concerned. Advices from Milwaukee are to the effect that Treasurer W. E. Goodman will head a delegation from Milwaukee, consisting of between 30 and 40 members.

New York City Notes.

The trade were shocked to learn of the death last Saturday of Samuel L. Malcolm, ex-president of the National Association and of the New York local. Mr. Malcolm attended a meeting of the Manhattan Branch National Delegates on Friday afternoon, and several remarked as to how well he looked. Acute indigestion was the cause of his death. He came to New York from Pittsfield, Mass., in 1858. and worked for Elias Hatfield at 144 Broad street, carrying the bag for James Nugent, who is now in business at 214 Grand street. At the outbreak of the Civil War he enlisted in Company C of the celebrated "Hawkins Zouaves," Ninth New York Volunteers, and served the four years of the war. He was familiarly known as the "Little Sergeant." In 1894 he delivered the oration at the unveiling of the Zouaves' Monument at the battle-field of Antietam. Mr. Malcolm's history in association matters is well known to all, and those who have had dealings with him can well describe his character in the words of Lincoln: "With malice toward none and charity for all." The funeral services held from his late residence, 313 West 112th street, last Tuesday evening, were largely attended by the trade. Among those attending and who went to the burial at Greenwood on Wednesday were National Executive Committeeman Thos. F. Gaynor and ex-National President Patrick Tierney of Providence, R. I.

* * *

Trade is still picking up, and all will be busy when the different jobs lately given out get well under way. James Armstrong is plumbing the new Woman's Hotel, running from Twenty-ninth to Thirtieth streets, between Madison and Fourth avenues. Reynolds & McMahon have a large apartment house, 60 x 86 feet, on 141st street near Seventh avenue. Alex. Cameron is building and plumbing four apartments on 107th street near Manhattan avenue. J. F. Boyle has an apartment and restaurant at the corner of Columbus avenue and Seventy-fourth street. P. Lauria of 244 Mott street is plumbing four flats on Fourteenth street west of Second avenue. Geo. Dellon has tenements at 210 to 214 Cherry street and at 64 and 66 Avenue C. B. A. Buge has tenements at 8 to 12 Jones street. J. Berliner is doing two tenements at 334 and 336 West Fifty-third street. Louis Kayfetz has two tenements at 61 and 63 Perry street. M. A. Belford of Brooklyn is doing the work in a new gas house on Sixty-sixth street west of West End avenue.

* * *

The Law Committee of Manhattan Branch are actively at work in the matter of unlicensed plumbers, and have reported many to the Bureau of Buildings. Many of those not caught at work have been compelled to take in their signs.

Heating and Plumbing Notes.

The Homestead Valve Company, who recently removed from Pittsburgh to Homestead, Pa., have purchased a tract of land, 100 x 200 feet, adjoining their plant, on which they will erect a brass foundry and iron casting department. It is reported that the company will shortly place a new Valve on the market.

Bids will be received at Fort Riley, Kan., until June 10 for plumbing and heating several buildings at that place.

C. W. McKeehan has formed a partnership in the plumbing business with Mr. Pugh, at Columbus, Ohio.

R. V. Edel, heating engineer, informs us that he has removed his office to 366 West Broadway, New York, where he has better facilities for making plans for heating buildings with steam and hot water, and solicits patronage from architects, steam fitters and boiler houses.

The City Property Committee of Springfield, Mass., have awarded the contract for heating apparatus for the new Glenwood School to Z. C. Clapp, who bid $1397.

James Harris, a well-known heating engineer and contractor of Hartford, Conn., is now located at 548 Asylum street, where he has spacious quarters in which to conduct his growing business. Mr. Harris was for many years located on Ford street and is well known throughout the city and vicinity, having filled a large number of important contracts. Aside from steam and hot water heating, he also does a plumbing and gas fitting business.

The W. D. Allen Mfg. Company, 151 Lake street, Chicago, Ill., send us a copy of their 1902 catalogue, No. 16, devoted to Leather Belting, Piston Packing and Specialties in Mill Supplies. The catalogue is furnished with a well arranged index. The first section refers to Leather Belting and all the supplies and apparatus used in connection with it. Spray Nozzles, Lawn Sprinklers, Hose Couplings and Menders, Branch Pipe and Hose occupy another section of the book, followed by Hose Spanners and a complete line of Fittings and Valves, with Branch Pipes for Fire Department use, or for installation of fire fighting equipment in factory buildings. including Hose Racks and Hose Reels. Water Back Couplings and Grease and Oil Cups in great variety form a line of Brass Goods. The last section of the catalogue is devoted to Packing of various kinds.

The new Board of Plumbing Inspectors at Grand Rapids, Mich., is composed of Health Officer Koon, City Engineer Anderson, Harry Thompson, William Robertson and William H. Vanderveer. One of the first actions of the board after organization was to examine the list of registered plumbers and notify those who had neglected to take out a license to procure one at once, or cease work.

Irving Knowlton of Canajoharie, N. Y., has arranged to provide the Methodist Church in that city with a steam heating apparatus at a cost of about $1000, upon which he will draw interest at 4 per cent. as long as he lives, the obligation to be canceled by his death.

The Ohio Brass Company, Mansfield, Ohio, issue a little catalogue devoted to high grade Brass Goods for engine builders' and steam and hot water fitters' use. The introduction states that the goods are well proportioned, extra heavy, of fine finish and of the best quality of workmanship, as well as thoroughly tested before shipment. The catalogue also shows Radiator Valves, Union Elbows, Globe Valves, Gate Valves and Check Valves. The Chicago Heater & Supply Company, 33 Dearborn street, Chicago, are the company's Western agents.

Frank T. Bassett of the Boston office of the American Radiator Company, was a visitor in New York this week.

A. H. Ferguson, Coronado, Cal., informs us that he has the contract for installing the plumbing system in an addition to the Southern California Hospital for the Insane at San Diego. He reports that the plumbing business all along the coast is very active at this time.

A new heating and electric lighting plant will be installed in the Ohio State Institute for the Blind at Columbus, Ohio. Stribling & Lum of that city are preparing plans for the improvements.

The Crane Company, Chicago, manufacturers of Wrought Pipe, Valves and Fittings, have recently established branches at the following cities and under the following names: Crane & Ordway Company, Duluth, C. A. Payne, manager; Crane Company, Seattle, L. B. Peeples, manager; Crane Company, Salt Lake City, Wm. Bowen, manager. A full line of Plumbers' and Steam Fitters' Supplies, in addition to the Crane Company's products, will be carried at all these branches.

The latest improvement made in the Forbes Die Stocks, manufactured by the Curtis & Curtis Company, Bridgeport, Conn., has had the effect of increasing their popularity. It consists in the adjustment of the shell, or casing, so that the wear of the gear may be taken up. In many machines for cutting and threading pipe, the gear wears itself loose in the shell after a time, so that a perfectly straight thread is not easily obtained. This difficulty is said to be wholly overcome in the present Forbes Die and Stock. The Dies used are cheaper than solid Dies and much more durable. All parts of the machine are interchangeable.

J. N. Wilkinson, president of the Board of Regents of the State Normal School at Emporia, Kan., will receive bids until June 2 for heating and ventilating a new library building in that city.

L. A. McGuigan, Davis, W. Va., bid $3456 and secured the contract for plumbing and heating the new Geisberger Hotel at Thomas, W. Va., and will use for the purpose two large size Model Steam Boilers and 3236 square feet of radiation.

Frank C. McLain is sending to the trade an announcement of the removal of his office from Thirty-eighth street and Eleventh avenue to 1123 Broadway, New York, with telephone No. 235 Madison square. Mr. McLain states that he will confine himself exclusively to the sale of Steam and Hot Water Boilers, Radiators, Tanks and Supplies, and solicits the patronage of the heating trade.

The Buffalo Forge Company, Buffalo, N. Y., are sending out a mailing card showing a yachting scene with the title, "You Can Keep Cool at Home." On the reverse side are presented cuts of several styles of the Buffalo Disk Wheels for ventilating, cooling, drying and for removing odors, fumes, smoke, dust and steam from buildings.

Within a few weeks the new catalogue "H" of the Kellogg-Mackay-Cameron Company, Chicago, will be issued. Indicative of the great strides this progressive company have made in the last few years, it will be a book complete in every detail and devoted to Steam and Hot Water Heating Apparatus. The illustrations have all been carefully selected, and the text, tables and lists are condensed and revised with the aim to make the book most conveniently arranged and most easy to use. There is not an appliance, piece of apparatus or part of the "machinery" needed by the steam fitter or contractor in his work that is not shown therein in its most improved pattern. The heating man will find this book, of something over 350 pages, of great use as a reference book, but should he look further into the matter, which it is the aim of the company he should, the claim is made that he will find the corresponding prices to his great advantage to investigate. A copy will be sent on request, in rotation as requests are received.

One in three is about all the games that Captain Emery can inspire the Plumbing and Steam Supply League team to win in the Business Men's Championship Tournament. But then every team cannot win, and the "boys" are getting lots of enjoyment out of the contests just the same. Ex-President Haff is rendering effective service, and A. E. Good has proved a good help in offsetting the "breaks" made.

The J. L. Mott Iron Works are issuing from their uptown showrooms at 110 Fifth avenue, New York, a very tasteful invitation to visit and examine one of the handsomest exhibitions of modern elegance in bathroom equipment and sanitary goods that has ever been arranged. There are several features of notable interest, and benefit will be derived by an examination of the display.

In order that the plumber may not, through oversight, neglect to arrange to attend the convention of the National Association of Master Plumbers, President Hornbrook has prepared a blotting pad printed in red and blue calling special attention to the "Cleveland Resolutions," which are represented as on the way to Atlantic City, N. J., in an automobile, and inviting all plumbers to get into line in support of the principle of trade protection.

George Genshart has moved his plumbing and tinsmithing business into a fine new store at East Mauch Chunk, Pa.

New Firms and Changes.

The Keystone Valve & Mfg. Company, recently incorporated at Pittsburgh, Pa., with a capital of $100,000, will, it is reported, shortly secure a site for a plant whereon they will build a factory for the manufacture of all kinds of Valves, having an initial capacity of 100 Valves a day, among them being a newly designed Steel Valve patented by Henry E. Keyes of Homestead, Pa. The incorporators of the company are J. B. Riley, William A. Larimer, William R. McCulley, William J. Simpson and Stephen Mackay. The Board of Directors includes the above incorporators together with John A. Logan, E. A. Griffith, N. H. Schooley and Hugh McCulley.

The Nashville Steam Heating Company have been incorporated at Nashville, Tenn., with J. P. Gray, president, and W. L. Horn, secretary, to erect a $5000 steam heating plant to furnish steam heat to dwelling houses, stores and offices.

The Hub Supply Company have been incorporated at Kittery, Maine, with a capital stock of $10,000 to deal in Plumbers' Supplies, &c. The president is Horace Mitchell and the treasurer A. M. Meloon.

The Standard Plumbing & Contracting Company, 51 Newark street, Hoboken, N. J., have been incorporated for the purpose of manufacturing Plumbers' Specialties. The capital is $3000, and the incorporators are Harry Salvator, John J. Weller and Julius Lichtenstein.

J. R. Croot will open a plumbing shop at 22 Macon street, Summit, N. J.

The Butler Mfg. Company, Butler, Mo., having a paid up capital of $12,000, have been incorporated to manufacture Plumbers' Supplies. The stock is held as follows: Charles R. Butler, 26 shares; Kate M. Butler, 3; N. W. Butler, Hydor, Ok., 100; E. E. Norquist, 21.

Henry H. Fairchild succeeds the plumbing and house furnishing goods house of Fairchild & Oliver at Morristown, N. J., Charles C. Oliver withdrawing from active business life.

SUCCESSFUL SIGN ADVERTISING.

On different occasions we have presented half-tone engravings of the business establishment of J. T. Henshaw & Co., 736 Thirteenth street, N. W., Washington, D. C., and called attention to his unique method of advertising. Mr. Henshaw's place of business is passed daily by a large number of the citizens of Washington, and he calls their attention to his specialties by means of written signs, some on blackboards and some on paper. Mr Henshaw is not only something of an artist with the crayon, using different colors to write his advertising phrases, but also possess no small amount of talent in originating striking sentences which impress the memory of the readers in a manner which he has found to be profitable to his business. In a letter recently received from Mr. Henshaw he says: "Almost a decade has passed since I mailed you my first photograph, and now, after ten years of prosperity, I favor you with a second edition. I still pursue my original method of advertising and am more firmly rooted than ever in the good graces of a lucrative patronage. I thank *The Metal Worker* for having much to do with the thoroughness of my mechanical training."

The photograph mentioned shows, at the top of the building, an immense sheet metal teapot, and beside it an ornamented chimney top. On the front of the building there are nine signs, all written in white chalk on blackboards. It is said that many people pass a few blocks out of their way to read Mr. Henshaw's signs. These, at times, treat not only of what is occupying the national attention, but of fashion as well, and he makes them the occasion to draw attention to his own business. One of these signs reads as follows: "If the American girl will draw about herself the cloak of respectability as tightly as she does her skirts, even the corner loafer will protect her honor with his life." Another says: "The pleased customer comes back again." Others run as follows: "Come, let us reason together; don't that old roof need painting or repairing?" "Is your furnace out of order?" "Does your fire place heater fail to operate?" "Is not something wrong with the range?" "Leave your order with us, and all will be made promptly and thoroughly right." Another states, "We have a scrupulous regard for good work and offer you nothing but the best material and the best workmanship." Still another says: "By persistent endeavor we have attracted the notice and patronage of many substantial people; by honest and efficient work we held their confidence and retain their trade." These are a few of the ideas that have been presented on Mr. Henshaw's signs, and they are reproduced as suggestions for others, who can doubtless follow the example which he has set with advantage to their business.

Burton's Felt and Burlap Asphalt Roofing.

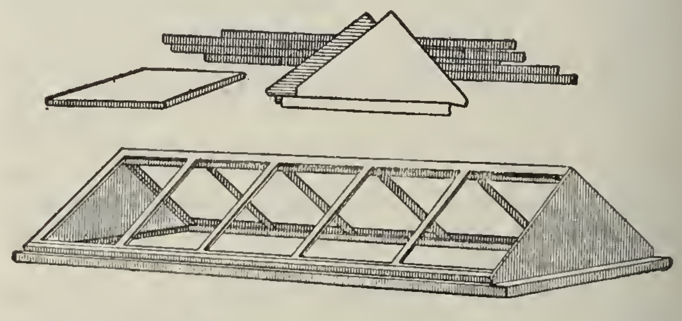
W. J. Burton & Co., 160-166 West Larned street, Detroit, Mich., are sending out a little circular in the interest of Burton's felt and burlap asphalt roofing. This roofing is composed of a layer of 15-pound asphalt saturated felt, on which is imposed a layer of asphalt. This again is covered with Calcutta burlap saturated with asphalt, another layer of asphalt being again placed upon it, and the whole being covered on the top with fine screened and washed gravel. This roofing is made by improved machinery and its advantages over the old style of composition roofing is that in place of tarred paper, heavy asphalt saturated wool felt is used, and instead of another layer of tarred paper a thick layer of pure asphalt. Where, in most roofing of this kind, tar is mopped on by hand, thick in some places and thin in others, the asphalt in the Burton roofing is spread by machinery, which is claimed to give a thick, even coat, and the gravel is rolled in by machinery, so that it becomes absolutely a part of the roofing and is not readily detached. The roofing is made and shipped in rolls 32 inches wide and 41 feet 4 inches long. It is guaranteed on roofs of one-half pitch and can be easily and quickly laid, forming invisible seams. The roofing can be laid over shingles, tin, tarred paper, &c., and it is claimed to be warm in winter and cool in summer. It is also adapted for use for gutters and flashings, and is said to have remarkable fire resisting qualities. An evidence of its durability is found in the fact that Burton's roofing has been in use as step pads on the stairs of Chicago Elevated Railroad stations for several years and is still in good condition. The company furnish, without extra charge, for each square, 1 pound of nails and 1 gallon of asphalt cement for laps. They also give each customer a knife for cutting the roofing and a brush for applying the cement to the laps. The manufacturers state that over 400,000 squares of this roofing is in use by the United States Government, State and city governments, railroads, manufacturing companies, corporations and private individuals all over the country.

Robert Jahn.

Through an unfortunate accident Robert Jahn, who is well known to the sheet metal working trade in the vicinity of New York, met his death in the early part of May. Mr. Jahn conducted a cornice making establishment at Scotch Plains, N. J. In the evening he went to the building in which he stored his paints and materials, with a five-year-old son, who carried a light. Through an explosion both lost their lives. Mr. Jahn, who was a German and learned his trade in Germany, was not only a fine workman, but a thorough master of his business, having designed and constructed the cornices of some of the finest buildings in the vicinity of New York City. He is survived by his widow and several children.

New Galesburg Metal Skylight

The Galesburg Cornice Works, Galesburg, Ill., are making the new metal skylight of which illustrations showing the fitting in parts and set up are presented herewith. This skylight has the advantage that it can be shipped "knocked down," with a bundle of bars and a box of glass. It can be handily transported in this condition to the required position on a roof all ready to be set up on the curb without any tools but a hammer. No cutting or soldering and no putty are needed, everything being made to fit into place on the curb. It is claimed that one of these skylights can be put on a curb on a roof, ready for the glass, in ten minutes, and in ten minutes more can be completed with glass in position. These skylights are made complete, with glass, in six sizes—namely, 3 x 4, 3 x 6, 4 x 6, 4 x 8, 5 x 10 and 6 x 8 feet. Where required, they can also be made with louver ventilators in the ends. The company make all styles of metal skylights, but claim that this pattern is the acme of devices in this line.



New Galesburg Metal Skylight.—View in Parts and Erected.

Briscoe Mfg. Company.

Briscoe Mfg. Company, Detroit, Mich., successors to the Detroit Galvanizing & Sheet Metal Works and the Century Rural Mail Box Company, have recently reorganized with largely increased capital, the present capital being $250,000, paid in. The officers of the reorganized company are as follows: Benjamin Briscoe of Detroit, president; Richard Irvin of New York City, vice-president; Frank Briscoe of Detroit, secretary and treasurer, and Chas. Puddefoot of Detroit, superintendent. Mr. Irvin is the senior member of Richard Irvin & Co., exporters and importers, of New York. In connection with lines they have heretofore manufactured, such as oil cans, air tight stoves, rural mail boxes and specialties in sheet metal goods, they purpose adding a line of galvanized ware and a number of hardware specialties. They have lately installed a large number of presses and special machine tools, so that the equipment in their machine shop and pressroom is, they believe, one of the best in the country, the additions recently made giving them a very complete outfit for manufacturing any kind of sheet metal goods, either on contract for others or to market themselves.

New Tin Plate Company.

L. C. McFatridge of Atlanta, Ind., advises us that the organization of the Atlanta Rolling Mill & Tin Plate Company will be completed this week, and a charter will be applied for, with a capital stock of $250,000. Practically all of the stock has been provided for and the installation of the plant will be begun about June 1. As noted in these columns a few weeks ago, the company will re-establish the tin plate industry in the Atlanta Steel & Tin Plate plant recently dismantled by the American Tin Plate Company, installing a modern four-mill plant at first, which will later be increased to six mills. The product will be black and tin plate. The company will be ready to purchase entire equipment after June 1, including engine and boilers of from 1000 to 1200 horse-power, electric traveling crane, shears, &c.

The Budke Iron & Steel Company.

The Budke Iron & Steel Company have been organized at Pittsburgh with a capital of $850,000 and will apply for a Pennsylvania charter. The company will build a plant at Shannopin, Pa., on the Pittsburgh & Lake Erie Railroad, 19 miles from Pittsburgh, for the manufacture of the finer grades of iron and steel sheets, such as are used for enameling and deep stamping. The plant will be a modern one and will consist of a main building 100 feet wide and 150 feet long, a puddle and knobbling mill 200 feet long and 60 feet wide, a sheet mill building 325 feet long by 113 feet wide and a boiler house 100 x 80 feet. The equipment will consist of four stands of cold rolls, six stands of hot rolls, three stands of roughing rolls, one 25-ton electric crane, one 4-ton steam hammer, eight puddling furnaces, eight knobbling fires and three-high bar mill. It is possible the company may add an open hearth steel plant later on to make their own supply of steel. John F. Budke, who for many years was connected with the Canonsburg Iron & Steel Company, at Canonsburg, Pa., will be actively identified with the new concern, and B. C. Vaughn, formerly with the Pittsburgh & Lake Erie Railroad, will be treasurer.

A New Can Company.

The Columbia Can Company have been incorporated in St. Louis Mo. The papers were filed last Saturday, May 17, and the company will commence operations immediately at 501 North Main street. At a meeting of the stockholders, held last Saturday, the following officers were elected:

President, Herman F. Westerbeck.
Vice-President, Fred. L. Westerbeck.
Secretary and Treasurer, Emil J. Westerbeck.
Manager, Charles Doermann.

All the parties interested in this company have been in the business the greater part of their lives and are thoroughly experienced. Their plant will be equipped with the latest improved machinery, and when it is completed and in full working order will be one of the largest in the West. At present the factory will cover a floor space of 28,000 square feet.

THE AMERICAN CAN COMPANY have awarded the contract to C. R. Parlett of Norfolk, Va., for the erection of a new Tin Can factory in Baltimore, Md., to cost $68,000. The new plant will be located on land adjacent to the company's Norton factory.

The Fred. J. Swaine Company.

The Fred. J. Swaine Company, 930 and 932 North Main street, St. Louis, Mo., manufacturers of presses, dies and sheet metal machinery, are compelled, owing to their constantly increasing business, to find larger quarters and have purchased a site on the northeast corner of Seventh and O'Fallon streets, 111 x 125 feet, on which they will erect a modern factory with the latest facilities. The new shops, when completed, will be more than twice as large as the present quarters. The machine shops will be divided into two departments—namely, die and press work. The press department will be equipped throughout with traveling cranes, hoists, &c., and also with several new tools, such as planers, boring mills and a number of small tools. The die department will be augmented with several special tools to enable the handling of small special work. The pattern making department and the drafting rooms will be doubled in size. The blacksmith shop will be enlarged and equipped with all necessary tools. The company also propose adding about four ovens or furnaces for welding and hardening. The latter line has become quite an item in their business. Under the general offices will be located, in the basement, the boiler room, coal bin and also the washrooms for the men. The company say they have made every provision to have their lockers, wash stands, &c., equal to the finest in the country.

The Tin Plate Workers' Convention.

The fifth annual convention of the Tin Plate Workers' Protective Association, in session at New Castle, Pa., adjourned last week. A new tin house scale was adopted, but will not be made public until after a conference is had with the American Tin Plate Company and other concerns. The following officers were elected: George Powell, president, New Castle; Charles E. Lawyer, secretary and treasurer, Wheeling, W. Va.; Grant Jacobs, vice-president, first district; Bent L. Barrett, second district, New Castle; H. E. Barrett, third, or Pittsburgh district; James Smith, fourth district, Martin's Ferry; Board of Trustees: Benjamin Teagarden, Martin's Ferry; J. E. Elder, New Castle, and E. E. Catterhenry, Elwood, Ind. The next convention will be held at Anderson, Ind.

FLASHINGS.

CIRCULARS will soon be issued by the Amalgamated Association of Iron and Steel Workers, at Pittsburgh, calling attention to a resolution adopted at the Wheeling convention relating to union and nonunion mills. The resolution makes it obligatory upon all members of the association working in "open mills" to organize lodges, and if this is not done by July 1 they will be compelled to work in union mills or else be expelled from the organization.

TEN of the 30 mills of the Shenango plant of the American Tin Plate Company, at New Castle, Pa., resumed operations last week, after being shut down owing to the wreck of a large part of the plant by a cyclone. The other 20 mills will be placed in operation as soon as the necessary repairs can be carried out.

THE official figures of the British Board of Trade show that the shipments of Tin and Terne Plates to the United States during the month of April amounted to 5896 tons, as compared with 3676 tons in April, 1901. The total shipments of Tin Plates from the United Kingdom to this country in the four months ended April 30, 1902, amounted to 26,565 tons, as against 13,897 tons in the corresponding period of last year, making nearly double the amount of Tin Plates sent over so far this year as compared with last year. The total shipments of Tin Plates from Great Britain to all foreign countries shows a gain of 20,000 tons in the first four months of this year over those of last year. The countries which show the largest increase, apart from the United States, are Australia and Canada.

IT is reported that Thomas G. Brady has secured an option on 450 acres of land near Clarksburg, W. Va., for the erection of Steel and Sheet mills. Mr. Brady is said to be acting for a New York syndicate.

The Wheeling, Roofing & Cornice Company, Wheeling, W. Va., have begun work on the large plant that they will erect at New Martinsburg, W. Va. The company are erecting Sheet mills and a corrugating plant, and will put in a blast furnace later.

John D. Evans, superintendent of the Tin Bar mill of the Sharon Steel Company, died on May 8 of apoplexy, at his home in Sharon, Pa., at the age of 51 years.

The Youngstown Iron, Sheet & Tube Company, Youngstown, Ohio, have broken ground for the erection of their new Skelp mill. It is expected that this department will be in operation early in the fall.

The bi-monthly wage settlements of the Tin Plate, Sheet and Bar scales were made last week, with the representatives of the Amalgamated Association of Iron, Steel and Tin Workers, it being found that no changes in the present wage scale were due. The scale of wages paid during the past two months will continue until July 1.

Gummey, McFarland & Co., Philadelphia, Pa., report that they have booked some very large orders for Gummey's Anti Pinhole Genuine Charcoal Iron Tin Plates, particularly for delivery in the western part of Pennsylvania, Ohio and New York. One good sized lot has been shipped to Jamestown, N. Y., for use on the New York State Armory Building at that place; several orders of from 100 to 150 boxes have been shipped for Western delivery, and a large factory roof is being covered with these Plates in Philadelphia. Gummey's Anti Pinhole Plates, the makers advise us, are meeting with exceptional favor among architects and manufacturers of old time Tinware, and the demand for them has greatly increased.

W. H. Griffiths Company, Incorporated, of Washington, Pa., recently completed and put in operation their new Black Plate mills at Waynesburg, Pa. The company's plant has an annual capacity of about 12,000 tons. They are also operating a tinning department in connection with their works.

Lintz & Opel are a new firm in the roofing, guttering and architectural sheet metal working business, at Sherman, Texas. They also make a specialty of Tanks. They opened a shop at 215 South Travis street on May 1, and will be glad to receive catalogues and price-lists from manufacturers and dealers handling goods in their line.

The Allegheny Steel & Iron Company, manufacturers of Sheets, with offices in the Park Building, Pittsburgh, and works at Avenue, Pa., have started up a second 50-ton basic open hearth steel furnace. The greater part of the Steel made in this furnace will be sold in the open market.

The Jackson Tin Plate & Iron Company, Clarksburg, W. Va., put their plant in operation this week.

Patrick Henry, superintendent of the New Castle Works of the American Tin Plate Company, at New Castle, Pa., died suddenly in Pittsburgh last week of heart failure.

The Eastern Granite Roofing Company, 90-92 West Broadway, New York, issue a finely printed pamphlet devoted to "Roofs and how to cover them," with remarks on the merits of their Perfected Granite Roofing. This roofing, we are advised, has been in use 18 years throughout the country. Fourteen views are given of railroad shops, piers, freight houses, manufacturing establishments, &c., which are covered with this roofing.

Geo. L. Mesker & Co., Evansville, Ind., are sending out their 1902 catalogue showing many new designs of Store Fronts, a line of Steel Ceilings, and containing several pages of miscellaneous Iron Work for buildings. A page is devoted to illustrations of buildings in different parts of the country for which the firm have furnished complete fronts.

The subject of the wage scale for the coming year is being actively canvassed in the English Tin Plate trade. Several meetings of the Conciliation Board have been held, but notwithstanding the fact that the present agreement terminates at the end of June, no approach to a settlement of the matter appeared to be in sight by last advices. The workmen are firmly adhering to their demand for payment on the area basis, which demand is resisted with equal firmness by the employers. It is feared that unless the latter will concede the demands of the men a strike may ensue. Meanwhile, some classes of workmen, such as the doublers, are advancing claims for an increased rate of wages.

The advantages of metal over wood in the construction of Skylights is shown in those made by the G. Drouve Company, Bridgeport, Conn. The company claim that whereas wooden Skylights are apt to leak, their metal ones are tight as a drum, and that while stronger than wooden Skylights, they are less bulky, therefore admitting more light. A "sweat gutter" in the Drouve Skylight carries off the inside condensation.

The Bullock Home Sharpener.

The accompanying cuts illustrate the Bullock home sharpener, manufactured by the Bullock Mfg. Company, 183 South Clinton street, Chicago, Ill. The sharpener is made of cold rolled steel, nickeled and polished, and is designed to be readily attached to any sewing machine. The grinding surface, which is of emery, is ⅝ inch wide, and it is claimed to be as durable and practical as the wheels used in factory work. The simplicity, durability and practicability of the sharpener are referred to by the manufacturers.

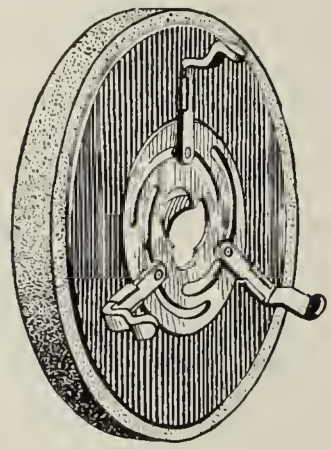


Fig. 1.—The Bullock Home Sharpener.

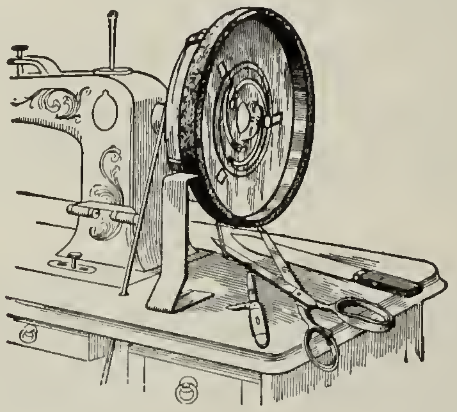


Fig. 2.—The Sharpener Attached to Sewing Machine.

A press report from Ogdensburg, N. Y., states that the Pittsburgh Reduction Company have secured 400 acres of land at Massena, N. Y., and will erect thereon five large buildings to cover about 15 acres. This plant will be devoted to the manufacture of Aluminum, and will cost, it is said, over $1,000,000. Electrical power from the St. Lawrence River will be used.

The Franklin Rolling Mill & Foundry Company, Franklin, Pa., have been incorporated with a capital of $750,000.

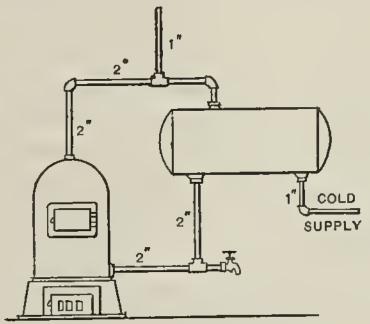
THE LETTER BOX.

Inquiries in regard to practical questions of general interest are invited, in reply to which we shall be glad to receive suggestions and information from our readers.

Correspondents are requested in all cases to give their names and addresses, which will not, however, be published or disclosed without their consent.

IS TANK HEATER CORRECTLY CONNECTED?

From R. M. D., Connecticut.—Please examine the tank heater connection shown in the sketch herewith, which has been submitted to us for a hot water heating apparatus for supplying hot water for domestic use in a flat house. Will you kindly give us your criticism as to the connection?



THE METAL WORKER

Is Tank Heater Connected Correctly?

Note.—We shall be glad to present the views of our readers on this subject.

HOW DO YOU CONNECT EXPANSION TANKS?

From J. M., Detroit, Mich.—In reply to "J. T. W.," in *The Metal Worker* of May 17, would say that it depends upon where the expansion tank is located as to what is the best method to follow in connecting it with a system. If the expansion tank is placed in a bathroom or other room that has a radiator in it, so that there is never any danger of its freezing, a single pipe running from the return pipe at a point near the hot water heater and connecting at the bottom of the tank is all that is required. If the expansion tank is placed in an attic where there is no other warmth it should have a two-pipe connection, one pipe being connected exactly the same as previously described; but this pipe should have a tee in it just below the expansion tank. From the side of this tee a pipe should be carried to the flow pipe on the nearest radiator. This will keep the circulation and make the water in the tank warm enough to prevent freezing.

From W. H. O., Brooklyn, N. Y.—For the benefit of "J. T. W.," whose inquiry appears in *The Metal Worker* of May 17, I would state that in my experience the best method of connecting expansion tanks depends on the conditions. A job that I recently completed at Kensington, Brooklyn, has the bathroom on the first floor, consequently I had to place the expansion tank in the garret. To overcome any possibility of freezing I put in a double connection, which is certainly the best, although it entails more labor and expense in piping. The overflow pipe was run through the roof. An expansion tank is not a very desirable thing to place in a fine bathroom, but I have seen a great many of them placed in bathrooms with the overflow run to the closet cistern, having but a single connection with the return pipe. This connection makes the job cheaper when the figuring must be close.

GRADE FOR SEWER PIPE.

From N. B., Farmville, Va.—We desire the following information in regard to sewer pipes: What size should the main be? Can a success be made with a 2000-foot sewer with a flat at the lower or discharge end, and with a fall of 10 feet in the 2000 feet? How many manholes should be placed along the line? Should the lower end become engorged by back water at the discharge, what will prevent the escape of sewer gas in the dwellings connected with the sewer?

Answer.—To answer the first question, covering the necessary size of main sewer for a small town, we should have the following information: The population of the town at present; its increase by decades for the last 40 years and a topographical map showing the veins and layers. It should also be stated whether the town has a water supply or not. There are two kinds of sewerage systems: one that carries storm water from the roofs, yards and streets, and the other that carries only house sewage. The latter is by far the least expensive, and it is presumed that it is the system about which the inquiry is made. However, in order to give some information, let it be assumed that the population is about 3000, with a consumption of water amounting to 100 gallons per capita per day, and that half of this water is consumed between the hours of 7.30 a.m. and 5 p.m. This would give a consumption of 150,000 gallons of water in nine and one-half hours, or 15,790 gallons per hour. It is probable that, in such a town, there is a valley line in which the main sewer could be run, and into it the lateral sewer branches would connect and discharge. Let it also be assumed that this main sewer can have a full grade of 1 foot to each 300 feet. Assuming the above and allowing for a reasonable increase in population, it would seem that a 10-inch main sewer running half full would be ample for some time to come. No sewer laid in a public street should be less than 8 inches in diameter. The sewer should discharge into moving tide water and not into a brook or stream, care being taken that the sewer be extended into deep water, and that there is no possibility of the sewage being washed up on shore.

The flat referred to by our correspondent, on which it is proposed to discharge the sewage, we understand to be land that is generally covered by water, but at times may be bare. Such a flat is to be avoided. It is far preferable to build a water tight retaining basin of such size as to hold half of the daily sewage discharge, and discharge this at the turn of the tide from flood to ebb.

Manholes should be placed in the sewer at street intersections and at all points wherever they may be put in the alignment of grade. These manholes should be ample in size, with heavy iron head, having a perforated cover. As a general rule, manholes should not be placed further apart than 300 feet. The stoppage of flow in a sewer is a serious thing and results in damage suits against the city, for flooded cellars, &c. Sewer air may escape, should a stoppage occur, from the perforated covers in the iron manhole heads. At the point where the house sewer leaves the building a running trap of extra heavy cast iron should be placed, and from the house side of the trap a 4-inch vent for the trap should be run to the external air. The house trap will effectually prevent any sewer air entering the house.

SHRINKAGE OF COMPOSITION CASTINGS.

From H. B. F. C., Buffalo, N. Y.—We write to inquire whether you could inform us through your valuable columns what the average shrinkage should be in making castings, which weigh from ½ pound to 3 pounds each, the composition of which is copper, zinc and tin? Of course, the percentages of these materials vary according to the class of work, but we should like to know about what the average shrinkage is? We mean by shrinkage the loss in evaporation. We should also like to know what the average shrinkage would be when new metal is used, and also if scrap is used?

Answer.—Very little is known outside of the large melters of copper and its alloys as to the loss of metal by evaporation. The experience of brass founders is that the loss from copper and tin alloy, such as the bronzes, is very small and much less than through the skimmings; possibly one-tenth of 1 per cent. With copper and zinc alloys in the various grades of brass the loss increased with the percentage of zinc, and is almost wholly in zinc. It may be estimated at from 1 to 3 per cent., depending upon the care with which the mixture is made. Adding the zinc in small quantities through a covering of powdered charcoal modifies the loss to a considerable extent. In melting scrap brass, in addition to the loss by evaporation of the zinc, there is much loss by oxidation; varying with the high or low quality of the scrap. Two to 3 per cent. with good brass in large pieces and as much as 10 per cent. in fine stuff may be lost in the hands of experienced melters.

WILL A HOT WATER PLANT OPERATE?

From F. G. E., Delmar, Del.—I am about to add heating as a branch of my business and propose to install the first system in a house that I am building for my own use, and I would like to heat it with hot water if I can do it successfully and economically. As it is impossible to provide a cellar, I would be compelled to set the boiler on the same floor on which I would want to place some of the radiators. I will want to heat the sitting room and dining room on the first floor (these rooms are about 16 feet square), and also three rooms on the second floor. Can this be done successfully, and will it cost any more to operate it after it is put in than it would to heat the same amount of space with stoves?

Answer.—Buildings in which similar conditions exist are successfully heated with hot water systems, and the economy of their use is said to compare favorably with heating by stoves. The system of piping best adapted to such conditions is what is known as the overhead system. In the overhead system the heating main is carried up from the boiler to the highest radiator and run horizontally with the branches to the different radiators, drop mains being taken from this top horizontal main to the radiators placed on the lower floors. The returns from these radiators may be carried below the floor joists and rise to connect with the boiler, if that is of any advantage. Care should be taken to secure a proper pitch to the pipes and to cover those which are exposed, so as to prevent undue loss of heat or freezing. Arrangements should be made at the lowest point of the system to draw off all the water in case repairs are needed or the building is to remain unoccupied. A small pipe can be carried from the highest point in the horizontal heating main on the upper floor to an expansion tank, in order to allow the air in the system to escape as it is filled with water. In any system of heating it is well to secure a boiler and radiators of ample capacity for the work, using piping of generous size.

ROOFING OVER OLD ROOFS.

From G. A. H., Cincinnatus, N. Y.—Will the brothers of our craft please give their views and experience in laying galvanized iron roofing on old roofs? Is it better to tear off the old shingles and lay the iron on the roof boards, or let the shingles remain and lay the iron directly on the old shingles? The question is, which will make the best roof? There is a difference of opinion in our shop, and we wish to settle it by reading the experience of others.

WANTS A BACK NUMBER.

From Ernest Kolmer, 119 Lodi street, Akron, Ohio.—I should like to get a copy of *The Metal Worker* of June 2, 1900, and will be glad to hear from anybody who has a copy that he is willing to sell.

AUSTRALIAN ALUMINUM.

BY JOHN PLUMMER, SYDNEY, AUSTRALIA.

Although the discovery of aluminum dates only from 1828, it has long been recognized as one of the most useful and important of the minor metals, chiefly by reason of its extreme lightness, its weight, bulk for bulk, being only one-fourth that of silver, which it resembles in appearance. This lightness has determined its use in the construction of very delicate balances designed to register fractional weights. It also resists the action of sulphur and sulphuric compounds, which have the effect of blackening silver. It is obtained principally from bauxite, a mineral consisting chiefly of alumina, or oxide of aluminum and oxide of iron, which, until recently, was obtained principally from France.

The existence of bauxite in New South Wales, Australia, was not known until 1899, when it was recognized by Mr. Jaquet, State Geological Surveyor, at Wingello, about a hundred miles south of Sydney, where he found it occupying considerable areas. Almost simultaneously it was detected in extensive deposits in the Inverell and Emmaville districts, in the northern part of the State. At Emmaville, in 1886, Professor David, when making a geological survey of the tin mining field, found that 12 square miles of country were covered by deposits of laterite or volcanic ash, from a few feet up to 40 feet in thickness, and this material now proves to be bauxite and wocheinite, for it occurs both in the pisolitic and massive forms. In the Inverell district, also, it is now known to occupy very considerable areas. Its mode of occurrence is similar in both districts; it is frequently roughly stratified, and is generally found capping small hills, in many cases surrounding points of eruption. It is clearly of volcanic origin, and while in some cases it appears to consist of volcanic ash, in others it may have been derived from the decomposition of basalt in situ. In color the New South Wales bauxite varies from pale yellow to deep red. Near Inverell it has been extensively used for making roads, with very satisfactory results, its value in the production of aluminum being unknown at the time. Only the bauxite deposits near Emmaville have been officially mapped out as yet; nor has there been anything in the shape of a systematic examination of those whose existence in the State has so far been ascertained.

At the present time aluminum is largely used for many purposes, and others are continually being discovered. Its non-poisonous character causes it to be pre-eminently adapted for the manufacture of cooking utensils. Tinware, as every housewife knows, is not particularly cheap in the long run, for it is constantly wearing out; cast iron is heavy and brittle, and copper requires to be frequently retinned in order to avoid all danger to health. An aluminum saucepan costs no more in the first instance than does a copper one, weighs much less, is perfectly innocuous, and does not periodically need a fresh inside; consequently it is not surprising that the employment of aluminum in kitchens and canteens is spreading rapidly. Bcycles of all kinds, electric light fittings, chains, bridles, stirrups, surgical instruments, sextants and other scientific apparatus, keys, cigar cases, pen and pencil holders, toilet articles, plates and dishes, spoons, forks, frames, name plates, door furniture, hat and coat pegs, boot trees, fire engine fittings, business and visiting cards, photographic cameras, &c., are a few of the things that are being daily made in aluminum by various British and other firms; these articles being usually sold at the same price as if they were composed of brass. Again, frames for cabs and motor cars have been made in aluminum; and though in England experiments have not yet been tried in this direction, aluminum railway carriage frames are under review in France. Especially for motor cars should there be a large field for aluminum.

A further demand for the metal will be brought about by its introduction into the military services. All parts of the soldiers' equipment have practically been made already in aluminum; such as mess tins, water bottles, buttons, helmets, parts of rifles, cartridge cases, fittings for guns, tents, horseshoes, portable bridges, &c. True, nothing much has yet been done in England in this direction; but it is well known that Continental armies, notably that of Germany, are employing aluminum on a large scale. In metallurgy, shipbuilding and other directions also the use of aluminum is steadily increasing, and should its manufacture be started in New South Wales, where bauxite is apparently more abundant than generally supposed, a new and profitable industry would become established. The ore could be conveyed by rail to places where coal is cheap and plentiful; also the materials for constructing smelters. Or the coal could be taken to the neighborhood of the bauxite deposits. Either way there appears to be a good opening for those possessed of the necessary capital, experience and energy.

TRADE REPORT.

MARKET SUMMARY.

Pig Tin is strong and quiet.

Copper shows more firmness, with a better demand.

Pig Lead is dull and firm.

Spelter is more active and rather scarce; prices are ⅛c. to ¼c. higher.

Antimony is unchanged.

Nickel is in good demand, and without change in price.

Aluminum is firm and in good demand.

Tin Plates are quiet, with prices unchanged.

Black Sheets are firm; demand is rather lighter.

Galvanized Sheets are not in such heavy demand, but are still active and firm.

Old Metals are firmer, with Scrap Brass and Copper higher.

Foundry Iron is very scarce, with prices high and little doing, by reason of scarcity.

Sheet Copper is in good demand, with prices firm.

Sheet Zinc is without change.

Hardware is moving in good volume and prices remain strong.

Plumbers' Supplies are in good demand, with prices in general strong.

Steel Clad Bathtubs are likely to be reduced in price.

Stoves and Furnaces are being advanced in price, the average being about 5 per cent.

Freezers are scarce and stiff in price.

Wire Nails are in better supply and the market firm.

Cut Nails are still rather in scarce supply and prices are well maintained.

Window Glass is likely to undergo another advance.

White Lead is active and steady.

Linseed Oil is firm and unchanged.

Spirits Turpentine is more active, with prices unchanged.

METAL MARKET.

New York, May 23, 1902.

Pig Tin.—Practically no change has taken place in the market. Prices here are held at about the same point as last week. Throughout the entire week the market has been very quiet, but firm. Jobbers quote Straits Pig in small lots at 31c. to 32c. per lb., according to quantity. Arrivals thus far this month amount to about 2100 tons and may reach 2900 tons by the end of May.

Copper.—An advance in the market for Copper, which began at the end of last week, has continued, and it is said that some heavy purchasing has been done on the strength of the rise. The advance is attributed to the operations of certain producers and others interested in floating a new Copper company. Some large consumers, appearing apprehensive that the metal may take a sharp upward turn, have consequently come into the market, thus lending strength to the renewed firmness. It is not generally expected, however, that prices in the Copper market will advance to any material extent, as it is known that stocks of the metal are ample if the holders will only put them on the market. Jobbers' prices are unchanged and firm at 13c. to 13½c. per lb. for Lake Ingot in small lots, and 12¾c. to 13c. for Casting Copper. Exports continue to show a falling off, amounting this month to only about 8000 tons.

Sheet Copper.—The consumptive demand for Sheet Copper is reported as active and the mills are full of orders, but makers do not seem to be inclined to take contracts very far ahead at present prices. Practically all the material now being turned out goes directly into consumption, which is quite heavy at the present time and promises to continue so. Prices are firm on the basis of 18c. per lb. for Sheet Copper from store.

Pig Lead.—No change has developed in this market. Business continues on a moderate scale and prices remain steady. American Pig in small lots is quoted at 4.45c. to 4½c. per lb. It is reported that a movement is now under way looking toward the consolidation of the large Lead producers in the Southern Missouri district. It is also stated that renewed efforts are being put forth to effect a consolidation of manufacturers of Lead Pipe and other kindred products, but, although the project is thought to be a genuine one, nothing definite on this head has yet been announced. St. Louis advices report a lack of activity and snap in the Lead market at that point, with prices, however, holding steady at last week's figures.

Spelter.—This metal continues to grow firmer, and was especially strong this week as regards spot. The demand is keeping well up to the supply and producers find no difficulty in disposing of their metal promptly. It is reported that several middlemen are finding the shortage of supplies somewhat embarrassing at this time. The Ore situation continues to grow stronger. Jobbers' prices have been advanced from ⅛c. to ¼c. per lb. Good Western brands in small lots are now quoted at 4.85c. to 5c. per lb. St. Louis advices are to the effect that pending labor differences have induced an advance in the price of stocks of Spelter on hand, and the consumptive demand has been fair. Prices are very strong.

Sheet Zinc.—The demand for Sheet Zinc is of the usual proportions and prices are firmly maintained at 6¼c. per lb. for 600-lb. cask lots and 6¾c. to 7c. for smaller quantities.

Antimony—Is unchanged. Hallett's in small parcels is quoted at 8⅝ to 8¾c. per lb.; U. S. at 8⅜c. to 8½c., and Cookson's at 10¼c. to 10¾c.

Nickel.—There is no change in the market for this metal. Small lots are quoted at about 55c. per lb.

Aluminum.—The demand continues active, and prices are without change. Small lots of No. 1 Ingot guaranteed 99 per cent. pure are quoted at 37c. per lb., and 100-lb. lots at 35c.

Tin Plates.—The market for Tin Plates remains quiet and uninteresting. There is no report of new business of any importance, while the mills continue to make heavy deliveries on old contracts. The retail trade is of very fair proportions for the season, and the outlook in this branch is regarded as favorable. American Bessemer Coke Plates, IC, 14 x 20, in moderate sized lots, delivered at New York and corresponding points, are quoted at about $4.75 to $4.90 per box. Jobbers' prices on Bright Charcoal Plates have been reduced about 50c. per box, owing to more liberal deliveries and the elimination of the scarcity which prevailed some time back.

Sheets.—The demand for Sheets is scarcely as active as it has been for some time past, although it is still of large volume. At the close the market for both Black and Galvanized Sheets was decidedly firm, with no evidence of any weakening in the near future. Makers expect a rush of orders later on and are doing their best to get abreast of the business at present on their books, so as to be in shape to meet the future increase in the demand. Meanwhile consumers are able to get more prompt shipments than for a long time past. It is noted that the demand runs much heavier for Heavy Sheets than for the light varieties. Galvanized Sheets are not in such pressing demand. All the mills making this class of material are said to be filled up with orders for some time to come. Jobbers' prices are, if anything, a trifle lower, owing to the increase in stocks. No. 27 One Pass Cold Rolled Soft Steel Sheets are now selling at about 3.75c. to 3.80c., and No. 24 Galvanized at 4c. to 4.20c.

Chicago advices are as follows: A stronger tone has been developed, with an increased volume of business transacted and a scarcity especially in heavy Sheets. No. 27 Black Sheets in small lots from store are quoted at 3.45c. to 3.55c. Galvanized Sheets are quoted at net prices, small lots from store ruling at 4.70c. to 4.75c. for No. 27, Chicago.

Old Metals.—The market for Scrap Metals is firmer and prices are somewhat higher on Old Brass and Copper. Dealers are paying about the following rates for moderate sized lots, delivered at New York or corresponding points:

Heavy Copper	per lb. 10¼c.
Light and Tinned Copper	per lb. 9¼c.
Heavy Brass	per lb. 8¼c.
Light Brass	per lb. 6½c.
Lead	per lb. 3⅝c.
Tea Lead	per lb. 3¼c.
Zinc	per lb. 2⅞c.
Pure Aluminum Sheet	per lb. 25 c.
Cast Aluminum	per lb. 20 c.
No. 1 Pewter	per lb. 18 c.
No. 2 Pewter	per lb. 9 c.
Tin Plate Scrap, per gross ton	.... to $5.00
Wrought Iron Scrap, per gross ton	$13.00 to 13.50
Heavy Cast Scrap, per gross ton	12.00 to 12.50
Stove Plate Scrap, per gross ton	8.50 to 9.00
Burnt Iron, per gross ton	7.00 to 7.25

THE PIG IRON MARKET.

New York.—The situation, so far as the local supply is concerned, has grown more serious, because of the Anthracite Coal strike. Melters of Iron are in increasing perplexity as to the immediate future, and some of the large foundries have even now been forced to curtail output. In the aggregate there are several thousand tons of Scotch Pig Iron coming in weekly. It is distributed in small lots in New England and along the coast. It is quoted $21.50 to $22 for one-third No. 1 and two-thirds No. 3. Southern Iron is being offered on the basis of $15.50 to $16 for No. 2, Birmingham, by interests formerly identified with the association. We quote, for summer delivery, Northern Iron, at tidewater, No. 1 X, nominal, $21.50 to $22; No. 2 X, $20 to $20.50; No. 2 Plain, $19.50 to $19.75. Tennessee and Alabama brands are as follows: No. 1 Foundry, $20.50 to $21; No. 2 Foundry, $19.25 to $19.75; No. 3 Foundry, $18.25 to $18.50.

Chicago.—While there has been an absence of large sales, the aggregate volume of business has been considerable, some dealers claiming a larger tonnage than during any other week since the heavy business of March. Quite a number of sales running from 100 to 500 tons have been placed for delivery during the last half of the year. The market could scarcely be any stronger. Iron for immediate shipment commands a premium of $1, or more, per ton over the prices current for late delivery, and 50c. per ton advance has been obtained on almost all grades of Southern Iron which have been sold. Notwithstanding the extremely high prices prevailing, the tendency seems to be still upward. There is no decrease in the melting of Iron in this section, but every day brings information of lighter stocks, many foundries working from hand to mouth, being obliged to enter the market to cover necessities, because of delayed shipments on contracts. We quote as follows:

Lake Superior Charcoal	$23.00 to $24.00
Local Coke Foundry, No. 1	22.00 to 22.50
Local Coke Foundry, No. 2	21.00 to 21.50
Local Coke Foundry, No. 3	20.50 to 21.00
Local Scotch, No. 1	22.00 to 23.00
Ohio Strong Softeners, No. 1	24.00 to 24.50
Southern Silvery, according to Silicon	20.40 to 20.90
Southern Coke, No. 1	20.15 to 21.15
Southern Coke, No. 2	19.65 to 20.65
Southern Coke, No. 3	19.15 to 19.65
Southern Coke, No. 1 Soft	20.40 to 21.15
Southern Coke, No. 2 Soft	19.65 to 20.40

Philadelphia.—Prices are too uncertain to be quoted with any closeness at the present time. We have heard of $20.50 for No. 2 Foundry Iron for June and July shipments, and also $21.50 and $22. Transactions are mostly for small lots, and it is difficult to place orders even for reduced quantities, as the furnaces are sold close up. For delivery during the last quarter of the year there is not much business to report. Makers of Pig Iron do not see much reason for discounting the future to any great extent, and as buyers are doubtful whether present prices can be maintained, they are not inclined to tie themselves to high priced Iron several months in advance of requirements. The natural result is an active demand for prompt shipment, on the best terms available, but with a mutual standoff for long deliveries. June and July shipments are anywhere from 50c. to $1 more than for the last half of the year, for which prices are usually quoted as follows for city and nearby deliveries:

No. 1 X Foundry	$20.50 to $21.50
No. 2 X Foundry	19.75 to 20.50
No. 2 Plain	19.50 to 20.00

Pittsburgh.—Sales of Pig Iron are confined to small lots, large consumers being covered and out of the market. No. 2 Foundry Iron is quoted at $21 to $21.50, Pittsburgh, but there have been recently some sales of round lots of Southern Foundry Iron for the Birmingham district at $20.15, delivered, Pittsburgh.

St. Louis.—The market at this point runs along in a quiet and even way, and the week under review is marked by some sales for delivery from July to December, aggregating some few thousand tons. All present offerings of No. 2 Foundry find a ready demand at $19 to $19.25, and other grades are held at prices to correspond. So far as we can ascertain these figures about mark the top price on recorded sales in this movement. The following is the range of prices current for cash, f.o.b. St. Louis:

Southern, No. 1 Foundry	$19.75 to $20.00
Southern, No. 2 Foundry	19.00 to 19.25
Southern, No. 3 Foundry	18.50 to 18.75
Southern, No. 4 Foundry	18.00 to 18.25
No. 1 Soft	19.50 to 19.75
No. 2 Soft	19.00 to 19.25

CHICAGO REPORT.

Scrap Iron and Steel.—The demand for all kinds of Scrap has continued active and the market has ruled firm at full prices, with a scarcity of desirable grades. Old Rails are less freely offered and firmer in tone. We quote dealers' buying prices for carload lots, Chicago delivery, as follows:

	Per net ton.
Country Wrought Scrap	$14.00 to $14.50
Machinery Cast	.... to 13.00
Malleable Cast	12.00 to 12.50
Stove Plate (free from burnt)	10.00 to 10.50
Burnt Iron and Grate Bars	8.00 to 9.00
Sheet Iron and Hoops	8.00 to 9.00
Plow Steel	12.00 to 13.00
Breaking Stock	.... to 11.00
Old Boilers—whole (Iron)	9.50 to 10.00
Old Boilers (Iron) cut in single Sheets and Rings	12.00 to 12.50
Old Gas Pipe and Boiler Tubes	12.00 to 12.50
Cast Borings	8.50 to 9.00
Turnings	12.00 to 12.50
Horseshoes	14.00 to 14.50

Old Metals.—In sympathy with the primary markets for new material, all kinds of Copper and Brass are stronger and higher, with a good demand and moderate offerings. Following are the prices paid by dealers in this market:

	Per lb.
Copper Wire and Heavy	11 c.
Copper Bottoms	10 c.
Copper Clips	11 c.
Red Brass	11¼c.
Yellow Brass	8½c.
Red Brass Borings	10 c.
Yellow Brass Borings	7½c.
Light Brass	7½c.
Pipe Lead	3.70c.
Tea Lead	3.35c.
Zinc	3 c.
Tin Foil	22 c.
Pewter, No. 1	19 c.
Pewter, No. 2	11 c.
Aluminum	20 c.

Old Rubber.—A further advance has been established on Rubber Shoes and a firm tone prevails for all kinds of Rubber, with an improved demand and only moderate offerings. The following prices are paid by dealers in this market:

	Per net ton.	Per lb.
Garden Hose	$25.00	.....
Air Brake Hose	42.00	.....
Rubber Shoes	....	7¼c.
Rubber Car Springs	....	5 c.
Inside Bicycle Tubing	....	22 c.
Outside Tubing	....	6 c.
Black Rubber	....	4 c.
White Rubber	....	8½c.

Rags.—Stocks are liberal and with freer offerings the market remains easy, there being but little outlet, but prices are unchanged. Dealers are buying at 70c. to 75c. per 100 lbs., Chicago delivery.

Anthracite Coal.—The market is unsettled, with few if any of the large companies accepting orders, and prices, while unchanged, are of a nominal character, subject to a discount of 40c. per ton for shipments in May; but should the strike continue higher prices may be expected at any time. The demand is very active and stocks on hand are not large.

	Grate.	Egg and Stove.
Chicago	$5.75	$6.00
Milwaukee, Wis.	5.75	6.00
St. Louis	6.20	6.45
Kansas City, Mo	8.25	8.50

THE HARDWARE TRADE.

The continued movement of goods, including the general line of hardware, keeps manufacturers and jobbers fully employed. This is especially true of season goods, the demand for which amounts almost to a clamor. Stocks of lawn mowers, freezers, and other goods which in the spring appeared ample for all requirements have dwindled in manufacturers' and jobbers' hands. The demand comes from the rank and file of the trade, and is devoid of speculative features. The protracted waiting of houses interested in the proposed jobbing consolidation has postponed the active purchase of goods. The uncertainty incident to this movement has had more or less influence on business, owing to doubt as to the outcome of the negotiations. Now that the matter has been, at least for the present, disposed of, the purchase of goods will doubtless be resumed in proportion to requirements, and buyers will plan for fall supplies. Manufacturers are not disposed to accept orders for fall shipment owing to the uncertainty of the future cost of raw material. Values of almost all lines of goods included in hardware stocks are firmer than in the spring owing to the gradual increase in cost of material and labor.

NOTES ON PRICES.

Steel Clad Bathtubs.—The manufacturers of Steel Clad Copper Lined Bathtubs, Steel Enameled (Painted) Bathtubs and Nickeloid and Rex Tubs are about to issue new list prices for this class of goods. The new list prices which the manufacturers of Enameled Cast Iron Tubs issued and put into effect on April 1, have put the lists for the Enameled Cast Iron Tubs below those of the Steel Clad Copper Lined and the Rex Tubs and the disparity in lists now existing is a series obstacle to the sale of Tubs of the Steel Clad variety. New list prices will be issued, showing a reduction, it is understood, of about 33 1-3 per cent. from the lists now prevailing. It is expected that the new lists will be in effect within the next week or ten days.

Plumbers' Sanitary Earthen Ware.—The members of the Sanitary Potters' Association have issued a circular letter to the trade in which they reiterate certain conditions of sale which have prevailed for some time past in the business, and they have also formulated some new rules by which their sales of Earthen Ware will, in the future, be governed. Under date of May 15. 1902, the following rules were put into effect:

> In order to remove any misunderstanding regarding trade terms and usages, we would call your attention to the following:
>
> 1. Terms of sale are net 30 days, or a discount of 2 per cent. will be allowed for cash received within ten days from date of invoice.
> 2. We do not allow for breakage in transit.
> 3. A charge of 5 per cent. will be added to the net invoice prices of ware for printing or stamping name on all staple closets, basins and urinals, short and tall hoppers and miscellaneous articles.
> 4. A charge of not less than $2 will be made for engraving the plumber's name on new name plate for use on ware, and an additional charge of 5 per cent. will be made, based on the net invoice price on such articles, for all goods stamped with the plumbers' name from said plate.
> 5. All goods shall be sold to the jobbing trade only.

The above is signed by the Trenton Potteries Company, Thos. Maddock's Sons Company, John Maddock & Sons, Keystone Pottery Company, Bellmark Pottery Company, Egyptian Pottery Company, Willets Mfg. Company, Sanitary Earthenware Specialty Company, Brian Pottery Company, Mercer Pottery Company, Acme Pottery Company, Ironsides Pottery Company, Standard Sanitary Pottery Company, Great Western Pottery Company and Riverside Pottery Company.

Walker & Pratt Mfg. Company, 31-35 Union street, Boston, Mass., announce, under date of May 20, that owing to the recent advances in prices of Iron and other materials and supplies entering into the construction of their goods, they have advanced the trade prices of their Stoves, Ranges and Furnaces 5 per cent., to take effect on the date named.

The Utica Heater Company, Utica, N. Y., issued, under date of May 15, a notice to the trade stating that on and after June 1, owing to the advance in Pig Iron and other materials, together with the recent advances in labor, they would withdraw all prices on their Furnaces. New prices will be furnished on application.

Follansbee Brothers Company, Pittsburgh, Pa., have sent out, under date of May 12, a new price-list of their high grade Roofing Plates, Bright Tin Plates, Solder, Sheet Zinc, Black, Galvanized, Polished and Planished Steel Sheets, Steel and Galvanized Roofing, Siding and Ceiling and Galvanized Ridge Roll.

Freezers.—The demand for Ice Cream Freezers is reported to be very heavy at the present time and manufacturers are from six weeks to two months behind in shipments. Jobbers complain that they cannot get enough of these goods to satisfy the demands of their customers. Prices on this line are very stiff.

Wire Nails.—The urgency for Wire Nails is not so acute as it was a month ago and manufacturers are catching up with orders. The New York market is in a very fair condition. The volume of business is satisfactory and stocks are well enough assorted to supply the demands of consumers. Prices are firm, small lots from store being quoted at $2.30 per keg.

Cut Nails.—The scarcity of Steel still causes delay in mills making prompt shipments of Cut Nails. The demand is about in the usual proportion to Wire Nails. The advances on the Cut Nail card are maintained in the New York market on small or mixed lots of Nails. Small lots of Cut Nails from store are quoted at $2.30 per keg.

Window Glass.—A meeting of the Window Glass Jobbers' Association will take place in Chicago within a few days and an advance in prices will be considered at this meeting. Some in the trade think that an advance will not be made at once, owing to the limited demand for Glass. The tendency, however, is undoubtedly toward higher prices, jobbers quoting Single and Double Strength Glass from store at 89 per cent. discount.

White Lead.—The demand for White Lead in Oil is reported as especially large from the South and West. An improvement is expected in the East during the summer months, at which time a larger amount of work is done. Prices are unchanged and steady. White Lead in Oil sells in retail quantities at 6½ to 6¾ cents per pound.

Linseed Oil.—The conditions in the Linseed Oil market are the same as for some time past. The current demand is restricted to small lots, while considerable Oil is being distributed on contracts. Mills are not seeking new business, and the market is firm. City Raw in small lots is quoted at 67 to 67½ cents per gallon.

Spirits Turpentine.—The strong tone of the Southern market resulted in quite an active local demand during the early part of the week, but the activity fell off somewhat in the last few days. The season's receipts of Turpentine at the South are reported as being about 6000 barrels behind last year. Jobbers' prices for Turpentine in retail quantities are 48 to 48½ cents per gallon.

JACOB MEURER of the firm of Meurer Brothers, Brooklyn, N. Y., dealers in Tin Plates, Metals, Roofing Supplies, &c., sails on Saturday, June 4, by the White Star Liner "Majestic" for a six weeks' trip to Europe for rest and pleasure. This is about the first prolonged holiday that Mr. Meurer has taken since he started in business, and his many friends in the trade unite in wishing him an exceedingly pleasant and satisfactory vacation, which he has well earned. Mr. Meurer, who is a persistent worker, finds that he needs this period of relaxation from the daily burden of business, which increases with him as the years go by.

Metal Polishes.

Some metallic articles have a brilliant luster, says the *Decorators' Gazette and Plumbers' Review* of London, and owe any beauty they may possess to this luster. In order to preserve it the articles are frequently lacquered; but by wear the lacquer comes off, and then exposure to air causes the metal to become tarnished, and to restore the luster the article is polished. The best luster is produced by friction, but this may be assisted by the use of polishing soaps, polishing pomades, polishing powders, polishing rags and such like, of which there are many makers; and for each of these polishing compounds various formulæ have been published. The active constituent of many of these is generally chalk, rouge, or tripoli, because these produce a polish on metallic surfaces, while some oil is frequently added as a medium for carrying them, and also some acid body to assist in cleaning the metal.

The following recipes give good polishing soaps:

1. 20 to 25 pounds liquid curd soap are intimately mixed with about 30 pounds of fine chalk and ½ pound Venetian red.

2. 26 pounds liquid cocoanut oil soap are mixed with 12 pounds tripoli and 1 pound each of alum, tartaric acid and white lead.

3. 25 pounds melted cocoanut oil are saponified with 12 pounds soda lye of 38 to 40 degrees B., after which 3 pounds rouge, 3 pounds water and 2 ounces ammonia are crutched in.

Polishing soaps are generally cut into cakes and stamped or pressed and brought into commerce with directions for use. The directions generally state that a small quantity of the soap is put on the metallic article to be polished with a damp flannel and rubbed until the desired polish is obtained.

Good recipes for polishing pastes are the following:

1. 5 pounds lard or yellow vaseline are melted and mixed with 1 pound fine rouge.

2. 2 pounds palm oil and 2 pounds vaseline are melted together, and then 1 pound rouge, ½ pound tripoli and 1 ounce oxalic acid are stirred in.

3. 4 pounds vaseline, 2 pounds oleic acid and 1 pound tripoli and sufficient kieselguhr are mixed together to form a paste of suitable consistence.

4. 4 pounds vaseline and 1 pound lard are melted and mixed with 1 pound rouge.

The polishing pomades are generally perfumed with essence of mirbane and filled into tin boxes.

Polishing powders are advantageously prepared according to the following recipes:

1. 4 pounds magnesium carbonate, 4 pounds chalk and 4 pounds rouge are intimately mixed.

2. 4 pounds magnesium carbonate are mixed with ¼ pound fine rouge.

3. 5 pounds fine levigated whiting and 2 pounds Venetian red are ground together.

◆

TRADE NOTES.

H. N. Shimer & Co., Philadelphia, smelters, refiners and dealers in Scrap Metals, have built a new refinery at Nineteenth street and Washington avenue, that city.

The Texas Fuel Oil Burner Company have been incorporated at Temple, Texas, with a capital stock of $50,000, by W. T. Bessonnette, C. R. Keesdike, N. A. Sayre and others.

The Greater New York Crude Oil Burner Company, New York City, have been incorporated with a capital of $600,000, to manufacture Oil Burners. The incorporators are Henry J. Kingsbury, Alfred George Brown and Frank R. Seiler of East Orange, N. J.

The Ohio Brass Company, with a capital of $1,000,000, have been incorporated under New Jersey laws to manufacture and deal in Brass Goods. The incorporators are Frank B. Black, Reid Carpenter, Charles N. King, Harry F. Black, George F. Lucas and E. T. Cook, all of Mansfield, Ohio.

Sidney Shepard & Co., Buffalo, N. Y., are making some important extensions to their plant. They have purchased three city blocks adjoining their present factory, and will erect upon this ground a number of new buildings adapted to the various lines of manufacture which they are carrying on. The buildings will be put up by degrees and occupied as soon as finished. The great increase in the company's business has rendered this extension imperative.

Cyrus Fowler has opened a store for the sale of Tinware and Enameled Ware, at Freedom, N. H.

◆

The works of the Welsbach Incandescent Company, at Westminster, England, were visited by a fire on May 20, and several floors of the building were cleaned out. The building adjoins the St. James' Park station of the underground road, and traffic was suspended temporarily. The damage to the Welsbach plant is estimated at $100,000.

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ROOFING SUPPLIES, METALS, TIN PLATES, &c.

REVISED MAY 23, 1902

Aluminum—

No. 1 Aluminum (guaranteed over 99% Pure), in ingots for remelting.

Small lots	₩ ℔, 37¢
100-℔ lots	₩ ℔, 35¢

Aluminum Sheet, B. & S. gauge.
In lots of 50 ℔s or more.

Wider than	6-in.	14-in.	24-in.
And including	14-in	24-in.	30-in.
	₩ ℔	₩ ℔.	₩ ℔.
Nos. 13 to 19	$0.42	$0.44	$0.47
" 20	.44	.46	.49
" 21 to 23	.46	.48	.51
" 24	.46	.50	.53
" 25	.47	.51	.54
" 26	.47	.54	.59
" 27	.48	.57	.62
28	.48	.57	.64
29	.49	.60	.69
" 30	.50	.64	.77

Note.—Lots of less than 50 ℔s 5¢ ₩ ℔ extra.

Antimony—

Cookson	₩ ℔, 10¼@10¾¢
Hallett's	₩ ℔, 8⅜@8¾¢
U.S.	₩ ℔ 8⅛@8½¢

Brass, Roll and Sheet 30%

Conductors—
Corrugated.

Round or Square.—

Galvanized ½ or more. N'st'd	70&10%
" Not Nested	70&5%
" Plain Round, ½ or more. Nested	70&10%
Galvanized, Plain Round, Not Nested.	70&5%

Spiral Lock Seam Pipe—

Galvanized	60@60&10%

Spiral Riveted.

Galvanized	40%

See also *Elbows and Shoes; Eave Trough Miters; Strainers, Conductor.*

Conductor Strainers—

See *Strainers, Conductor*

Copper—

Lake ingot	13 @13½¢
Casting	12¾@13 ¢
Sheet and Bolt	18¢ ₩ ℔ basis
Cold Rolled Sheets	19¢ ₩ ℔ basis
Cold Rolled and Polished Sheets	20¢ basis
Planished Sheets	21¢ basis
Bottoms, Pits and Flats	₩ ℔ 22¢ basis

Eave Trough Galvanized

Territory.	L. C. L.
Eastern	75&10%
Central	75&7½%
Southern	70&12½%
S. Western	70&10%

Terms, 2% for cash.

Eave Trough Mitres—

Lap or Slip Joint	list, 25%

Elbows—Plain Adjustable—

Eastern List.

Tin	30%
Galvanized	30%
Perfect Elbows	40%

Stove Pipe—

Four-Piece

	4	4½	5	5½	6-inch.
No. 1.	$0.80	.85	.90	1.00	1.05 per doz.
No. 2.	.65	.70	.75	.80	.85 "
No. 3.	.60	.63	.65	.70	.80 "

Elbows and Shoes—

Galvanized	60%

Gasoline—

See *Petroleum Products.*

Iron Sheet—*Black.*

	One Pass, C. R. Soft Steel.	R. G. Cleaned.
Nos. 14 to 16	₩ ℔, 3.40	3.45¢
Nos. 18 to 21	₩ ℔, 3.50	3.55¢
Nos. 22 to 24	₩ ℔, 3.60	3.65¢
Nos. 25 and 26	₩ ℔ 3.70	3.75¢
No. 27	₩ ℔, 3.80	3.85¢
No. 28	₩ ℔, 3.90	3.95¢

Russia, Planished, &c.

Genuine Russia, according to assortment	₩ ℔ 11@14 ¢
Do. Stained	6@10½¢
Patent Planished	₩ ℔ A, 11¢; B, 10¢ net

Galvanized.

Nos. 14 and 16	₩ ℔ 3.45@3.60¢
Nos. 18 and 20	₩ ℔, 3.70@3.90¢
Nos. 22 and 24	₩ ℔, 4.00@4.20¢
No. 26	₩ ℔, 4.25@4.50¢
No. 27	₩ ℔, 4.55@4.80¢
No. 28	₩ ℔, 4.85@5.10¢
No. 30	₩ ℔, 6.00@6.30¢

No. 20 and lighter, 36 inches wide, 25¢ higher.

Lead—

American Pig		4.45@4½¢
Bar		5@5⅛¢
Pipe	6½¢	20% off
Tin Lined Pipe	12½¢	20% off
Block Tin Pipe	42½¢	20% off
Sheet Lead	7¼¢	20% off

Old Lead in exchange, 3¼¢ ₩ ℔.

Mitres Eave Trough—

See *Eave Trough Mitres.*

Nickel—

Per ℔	55@60¢

Paints Oils &c.—
Leads—

Lead, American White, in Oil; Lots of 500 ℔ or over	6¼ @ 6½
Lots less than 500 ℔	6½ @ 6¾
Lead, White, in oil, 25 ℔ tin pails, add to keg price	@ ½
Lead, White, in oil, 12½ ℔ tin pails, add to keg price	@ 1
Lead, White, in oil, 1 to 5 ℔ assorted tins, add to keg price.	@ 1½
Lead, White, Dry in bbls	5¾ @ 6
Lead, Red, bbls., ½ bbls. and kegs: Lots 500 ℔ or over	@ 6
Lots less than 500 ℔	@ 6½

Oils—

Linseed, City, raw	₩ gal. 67@67½¢
Linseed, City, boiled	69@69½¢
Linseed State and West'n, raw	66@66½¢

Spirits Turpentine—

In Southern bbls	48 @48½¢
In machine bbls	49 @49½¢

Putty—

In bulk	$1.25
In bladders	2.25
In cans 12 ℔ to 25 ℔	2.25
In cans 1 ℔ to 5 ℔	3.25

Petroleum Products—

In Barrels (Barrel Included)

Stove Gasoline	₩ gal. 10½@11¢
Kerosene.	₩ gal. 12@13¢

Pipe Drain 40%

Pipe, Spiral—

See *Conductors.*

Registers—

List Sept. 2, 1901.

Black Japanned	60&10@60&10&5%
White Japanned	60&10@60&10&5%
Nickel Plated	60&10@60&10&5%
Bronze Finishes in Imitation of Gold, Silver, Copper or Bronze	60&10@60&10&5%
Electroplated in Brass, Bronze or Copper	60&10@60&10&5%
White Porcelain	60%
Solid Brass and Bronze Metal	50%

Roofing Material—

1 Ply Tarred Paper, ₩ ton	$31.00@32.00
2 Ply Tarred Paper ₩ roll, 108 sq. ft.	55@60¢
3 Ply Tarred Paper ₩ roll, 108 sq. ft.	80@85¢
Slater's Felt ₩ ton,	$35.00@36.00
Roofing Pitch	₩ bbl. $2.50

Rosin—

Common and Good—Strained.

Rosin, C. & D. ₩ bbl.	$1.62½@$1.65
Rosin, E. & F. ₩ bbl.	1.70 @ 1.75
Rosin, G. & H ₩ bbl.	1.80 @ 1.85
Rosin, I. & K ₩ bbl.	2.10 @ 2.70
Rosin, M. & N. ₩ bbl.	3.05 @ 3.55

Shoes and Elbows—

See *Elbows and Shoes.*

Slate Roofing—

f. o. b. cars, Quarry Station.

	According to size.
Pennsylvania:	
Best Bangor, ₩ sqr	$3.25@$5.00
No. 1 Bangor Ribbon, ₩ sq	3.25@ 3.50
Pen Argyle, ₩ sqr	3.25@ 4.00
Peach Bottom, ₩ sqr	5.25@ 6.10
No. 1 Chapman, ₩ sqr	3.50@ 4.35
No. 1 Penna. Black	$2.75@3.80
Unfading Washington Bangor	$2.25@4.25
Vermont:	
Sea Green, ₩ sqr	$2.00@$3.40
Purple, ₩ sqr	4.25@ 4.75
Unfading Green, ₩ sqr	3.50@ 4.50
Red, ₩ sqr	6 50@10.50
Maine:	
Brownville, Unfading Black. No. 1	$5.00@7.20

Solder—

½&½ guaranteed	20 @20½¢
No. 1	17½@19 ¢

Prices of Solder indicated by private brands vary according to composition.

Soldering Fluids—

	—Per Pound.— Barrels	Smaller Q'ntities
Concentrated Flux	4c	5c
Eureka Flux:		
Triple Strength	3c	3½c
Extra Concentrated	4½c	5c
Crystal	..	7c
Gedney's Fluid	2c	2c
Lennox Fluid	2c	3c
Perfection Flux	3c	3½@4c
Yager's Salts, 1 lb. bottles		each, 50¢
5 lb. bottles, per lb., 45¢		

Soldering Coppers—

Per ℔	20@22¢

Spelter—

Western Spelter	4.85@5.00¢

Spiral Pipe—

See *Conductors.*

Stove Pipe Elbows—

See *Elbows, Stove Pipe.*

Stove Trucks—

See *Trucks, Stove.*

Strainers, Conductor—

Galvanized	50%

Tin Pigs and Bars—

Banca, pigs, ₩ ℔	31 @32 ¢
Straits, pigs, ₩ ℔	31 @32 ¢
Straits, in bars, ₩ ℔	32 @33 ¢

Tin Plates, American
Charcoal Plates, Bright—

N. B.—The price of 20 x 28 sizes is double the price of 14 x 20.

Calland Grade:		
IC,	14 x 20	$7.00
IX,	14 x 20	8.50
IXX,	14 x 20	9.75
IXXX,	14 x 20	11.00
IXXXX.	14 x 20	12.25
Melyn Grade:		
IC,	14 x 20	6.50
IX,	14 x 20	8.00
IXX,	14 x 20	9.25
IXXX,	14 x 20	10.50
IXXXX	14 x 20	11.75
Allaway Grade:		
IC,	14 x 20	6.00
IX,	14 x 20	7.10
IXX,	14 x 20	8.20
IXXX,	14 x 20	9.30
IXXXX.	14 x 20	10.40

Coke Plates, Bright—

Bessemer Steel, or equal to J. B. Grade, full weight	IC, 14 x 20	$4.90@5.00
" "	IX, 14 x 20	$6.00

N. B.—The reduction per box on lighter Plates than IC, 14 x 20, is as follows:

100 ℔	15¢
95 ℔	20¢
90 ℔	25¢
85 ℔	30¢

Terne Plates—

N. B.—The following prices are for IC 20 x 28, the rate for 14 x 20 being half as much. IX is usually held at $2 per box advance for 8 to 10 ℔ coating and $2.50 to $3 advance for 15 ℔ and upward.

About 40 ℔ coating	$16.00@16.50
About 30 ℔ coating	15.25@15.75
About 20 ℔ coating	13.25@13.75
About 15 ℔ coating	11.25@11.75
About 8 ℔ coating	@10.00

Boiler Plates, American—

IXX, 14 x 26..(112 sheets)	$12.50
IXX, 14 x 28..(112 sheets)	13.50
IXX, 14 x 31..(112 sheets)	15.00

Troughs Eave—

See *Eave Trough.*

Trucks, Stove—

Improved Lock Frame, per doz	$15.00
Steel Lock Frame, per doz	18.00
Daisy Improved pattern, ₩ doz	18.00

Tubes and Tubing—

Brazed Brass, List June 6, 1898	40%

Copper and Bronze, 3c per lb. list more than Brass.

Seamless Brass Tubes, net list Feb. 6, 1899

Tin	50%
Galvanized	50%
Fittings for do	40%

Zinc—

600 ℔ casks ₩ ℔	6¼¢
Per ℔	6¾@7¢

PLUMBERS' AND STEAM FITTERS' SUPPLIES.

Boilers, Galvanized—

Standard Boilers:	
30 gal	72½%
35 and 40 gal	70%
Other sizes up to 52 gal	65%
52 gal. and above	55&5%
Extra Heavy Boilers:	
18 to 52 gal	60%
53 gal. and above	50&5%

Brass Work, Plumbers'—

List of December 7, 1896.

Compression:	
Basin Cocks	65%
Bath Cocks and Double Bath Cocks	65%
Bibs	65%
Bibs, Flanged	65%
Fuller:	
Bibs	70%
Basin Cocks, Nos. 1 to 4	70%
Bath Cocks, No. 4½	$2.40 each net
Ground Key Work:	
Finished Bibs	55&5%
Rough Bibs	70%
Rough Stop and Stop and Waste Cocks	70@70&5%
Rough Stop and Stop and Waste Cocks, Patented	65@65&5%

Miscellaneous—

Basin Clamps		60@65%
Basin Plugs		60@65%
Chain Stays.		60&5@70%
Iron Boiler Couplings:	Lead Pipe.	Iron Pipe.
Plain Face ₩ set	$0.95	$1.05
Ground Face ₩ set	$1.00	$1.10
Sink or Bath and Wash Tray Plugs		60@65%
Soldering Nipples		70&5@75%
Soldering Unions		70&5@75%
Union Elbows, Hot Water Heating		75@75&15%

Cocks, Valves, &c.—
Cocks—
Brass—

Air and Radiator Air	75@75&5%
Gas Meter and Union Meter	65@70%
Steam	65@70%

Iron—

All Iron	70@70&10%
Iron with Brass Plugs	65@70%

Valves—
Brass—

Check	65@70%
Garden Hose	65&10@70%
Gate	65@65&10%
Globe and Angle, hose outlet	65@65&10%
Globe, Angle and Cross	65&10@70&5%
Horizontal, Vertical and Angle Check	65@65&10%
Hot Water Radiator	75%
Radiator	70&10%
Safety	65%
Safety, Low Pressure	65%
Jenkins' Disc:	
Check	65%
Gate	65%
Globe, Angle and Cross	70%
Radiator	80%
Radiator, Corner	75%
Safety	65%

Iron—

Iron Body	70@70&5%
Foot	65@70%
Jenkins Bros.':	
All Iron, except Gate	40&5%
All Iron Gate	35@40%
Iron Body, except Gate	60%
Iron Body Gate	50@50&5%
Swing Check	50%

Earthenware—

Brown Glazed Wash Tubs	20%
Brown Glazed Sinks, Kitchen and Pantry	20%
Basins, Urinals and Hoppers	45%
Closet Bowls, Sundries, Washouts and Pedestals	50%

Fittings—
Brass Fittings—

Finished	70@75%
Rough	70@75%
Bushings	70@75%
Nipples	70@70&2½%
Unions, Rough and Finished	70@70&5%

Iron—

Cast Iron Fittings, Black and Galvanized, Standard sizes	65@70%
Cast Iron Bushings and Plugs	65@70%
Cast Iron Flanges	65@70%
Cast Iron Floor Flanges	65@70%
Malleable Iron Fittings (from ℔ list)	50%
" " Bushings	65@70%
" " Unions	65@70%
" " Unions, Flange	60&10@70%
" " Pipe Hangers, Universal	50%
Wrought Iron Nipples	65@70%
" " Couplings	60@65%
" " Long Screws	60@65%

Lavatories—

Porcelain Enameled Iron	30@30&10%

Oakum—

Plumbers' Oakum, 50 lb. bales, ₩ ℔	2½¢

Pipe—
Brass, Iron Pipe Size—

⅛	¼	⅜	¾ to 3 inch
$0.33	.31	.29	.23 ₩ ℔

Cast Iron Soil—

List Feb. 25, 1901.

2 to 6 inch inclusive.

Standard	50&5%
Extra Heavy	60&7½%
All Fittings	65&10%

7 to 15 inch.

Pipe and Fittings, Standard and Extra Heavy	50%

Wrought Iron—

List Feb. 15, 1900.

	Black.	Galv
⅛ to ⅜ inch	55%	41%
¾ to 12 inch	65%	50%

Radiators—

Standard List.

Steam	50&2½%
Hot Water	50%

Sinks, Etc.— Cast Iron—

	Black.	Galv.
Sinks, Square, Half Round and Corner	60@65%	60@65%
Sink Legs.	60%	60@65%
Sink Backs	60%	60@65%
Boiler Stands, Cast Iron		60@10@60%
Cesspools, Cast Iron		50%

Wrought Steel Sinks—

New Era, Galv'd and Enameled.	70&5%
New Era, Painted	50&10%
L. & G.	50%

Traps—

Drawn Lead Traps, List June 3, 1901	50&5%

Tubs, Bath—

List April 1, 1902.

Cast Iron Enameled Bath Tubs.

Regular Patterns, Guaranteed	30%
All Special Patterns	15%
Solid Copper, list of Feb. 1, 1899	40%

Solid Porcelain—Class A, 30%; B, 40%; C, 50%.

Steel Clad Copper Lined, list of Feb. 1, 1899	50@55%

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Arcade Mfg. Co	26
Armstrong Mfg. Co	29
Asheville Mica Co	21
Asphalt Ready Roofing Co	69
Aner Register Co	20
Anld & Conger Co	65
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Berger Bros. Co	63&56
Berger Mfg. Co	70
Bergstrom Bros. & Co	15
Bertsch & Co	74
Bliss, E. W. Co	74
Blodgett, G. S. Co	22
Boynton Furnace Co	10
Brand Stove Co	7
Bray, J. & Co	65
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Richmond Stove Co., Norwich, Conn.
Sheppard, Isaac A. & Co., Phila., Pa.
Smith, H. B. Co., Westfield, Mass.
Smith & Anthony Co., Boston, Mass.
Smith & Thayer Co., Boston, Mass.
Stolz, Frank D., Chicago, Ill.
Thatcher Furnace Co., 240 Water St., N. Y.
Utica Heater Co., Utica, N. Y.
Walker & Pratt Mfg. Co., Boston, Mass.

Hollow Ware.
National Enameling & Stamping Co., 78 Beekman St., N. Y.
Sperry, D. R. & Co., Batavia, Ill.

Hotel Cooking Apparatus.
Smith & Anthony Co., Boston, Mass.

Ice Cream Dishers.
Clad, V. & Sons, Philadelphia, Pa.
Seavey Mfg. Co., Boston. Mass.

Iron, Galvanized Sheet. (*See Sheets, Galvanized.*)

Iron and Steel, Sheet. (*See Sheets, Iron and Steel.*)

Iron, Planished Sheet.
Amer. Sheet Steel Co., New York.

Lath, Metallic.
Schratwiesers Metal Lath Works, Brooklyn, N. Y.

Lead Pipe.
Colwell Lead Co., 63 Centre St., N. Y.

Lightning Rods.
Washburns, E G. & Co., 46 Cortlandt St., N. Y

Lunch Boxes.
Seavey Mfg. Co., Boston, Mass.

Metal Ceilings. (*See Ceilings, Metallic.*)

Metal Window Frames.
Smith-Warren Co., Boston, Mass.

Mica.
Asheville Mica Co., Asheville, N. C.
Munsell, Eugene & Co., 218 Water St., New York.
Ohio Mica Co., Canton, Ohio.
Rutland Fire Clay Co., Rutland, Vt.

Milk Cans.
National Enameling & Stamping Co., 78 Beekman St., N. Y.

Nickel Plating Outfits.
Hanson & Van Winkle Co., Newark, N.J.
Zucker & Levett & Loeb Co., 526 W. Twenty-fifth St., New York.

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Blodgett, G. S. Co., Burlington, Vt.
Howes, S. M. Co., Boston, Mass.

Patent Solicitors.
Hamlin, G. R., Washington, D. C.
Howson & Howson, Philadelphia, Pa.
Stocking, E. B., Washington, D. C.

Patterns.
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Gobeille Pattern Co., Cleveland, Ohio.
Gray, G. L., Galesburg, Ill.
Vedder Pattern Wks., Troy, N. Y.

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Harrington & King Perforating Co., Chicago, Ill.

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Wister, L. & R. & Co., Philadelphia, Pa.

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Dighton Furnace Co., Taunton, Mass.
Hart & Cooley Co., New Britain, Conn.
Independent Register Co., Cleveland, Ohio.
Seavey Mfg. Co., Boston, Mass.

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Matthews, H. A. Mfg. Co., Seymour, Ct.

Registers, Hot Air.
Auer Register Co., Toledo, O.

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Asphalt Ready Roofing Co., 136 Water St., N. Y.

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Asphalt Ready Roofing Co., 136 Water St., N. Y.
Callahan, Geo. & Co., 218 Front Street, N. Y.
Chattanooga Steel Roofing Co., Chattanooga, Tenn.
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Roofing Cork.
Stowell Mfg. Co., Jersey City, N. J.

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Galt, John & Sons, 253 Broadway, N.Y.
Genuine Bangor Slate Co., Easton, Pa.
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Gordon, W. J., Phila., Pa.
Heartley Machine Variety Iron & Tool Works, Toledo, O.
Keene, Geo. C. & Co., Cincinnati, O.

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Miner & Peck Mfg. Co., New Haven, Conn.
Niagara Machine & Tool Wks., Buffalo, N. Y.
Ohl, Geo. A. & Co., Newark, N. J.
Peck, Stow & Wilcox Co., 27 Murray St., New York.
Phila. Machine Tool Co., Phila., Pa.
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Poorman Mfg. Co., Piqua, O.
Robinson, J. M. Mfg. Co., Cincinnati, Ohio.
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Steel & Iron Alnminnm Coating Co., Connellsville, Pa.

Sheets. Galvanized.
American Sheet Steel Co., New York.
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McClure & Co., Pittsburgh, Pa.
Osborn, J. M. & L. A., Cleveland, O.
Wood Alan Co., Philadelphia, Pa.

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American Sheet Steel Co., New York.
Bruce & Cook, 186 to 190 Water St., N. Y.
Coe, Jas. A. & Co., Newark, N. J.
Follansbee Bros. Co., Pittsburgh, Pa.
Gummey, McFarland & Co., Phila., Pa.
Osborn, J. M. & L. A., Cleveland, O.
Wood Co., Alan, Philadelphia, Pa.

Shingles and Tiles. Metallic.
Chattanooga Steel Roofing Co., Chattanooga, Tenn.
Cincinnati Stamping Co., Cincinnati, O.
Cortright Metal Roofing Co., Philadelphia, Pa.
Merchant & Co., Philadelphta, Pa.
Menrer Bros. Co., Brooklyn, N. Y.
Montross Metal Shingle Co., Camden, N. J.

Shot.
Colwell Lead Co., 63 Centre St., N. Y.

Siding. (*See Roofing and Siding.*)

Skylights.
Canton Steel Roofing Co., Canton, O.
Chattanooga Steel Roofing Co., Chattanooga, Tenn.
Dronve, G. Co., Bridgeport, Conn.
Mullins, W. H., Salem, O.
Shipman, H., Brooklyn, N. Y.

Slaters' Tools.
Galt, Jno. & Sons, 263 Broadway, N. Y.
Salem Nail Co., 279 Pearl St., N. Y.

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Clason Arch. Metal Works, Providence, R. I

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Bruce & Cook, 186 to 190 Water St., NY
Follansbee Bros. Co., Pittsburgh, Pa.
Gummey, McFarland & Co., Phila., Pa.
McClure & Co., Pittsburgh, Pa.
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Taylor, N. & G. Co., Philadelphia, Pa.

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Williams Stove Lining Co., Taunton, Mass

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Gobeille Pattern Co., Cleveland, O.
Milwaukee Pattern Works, Milwaukee, Wis.
Vedder Pattern Works, Troy, N. Y

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Howes, S. M. Co., Boston, Mass.
Marcy Stove Repair Co., 74 Beekman St., N. Y.
Metropolis Sheet Metals & Stove Repairing Co., Newark, N. J.
Troy Nickel Works, Troy, N. Y

Stove Trimmings, &c.
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Troy Nickel Works, Troy, N. Y.

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Arcade Mfg. Co., Freeport, Ill.
Howes, S. M. Co., Boston, Mass.

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Barstow Stove Co., Providence, R. I.
Beckwith, P. D., Est. of, Dowagiac, Mich.
Bergstrom Bros. & Co., Neenah, Wis.
Boynton Furnace Co., 207 Water Street, New York.
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Champion Steel Range Co., Cleveland, Ohio.
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Dighton Furnace Co., Taunton, Mass.
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Floyd, Wells & Co., Royersford, Pa.
Fuller & Warren Co., Troy, N. Y.
Home Stove Co., Indianapolis, Ind.
Magee Furnace Co., Boston, Mass.
Michigan Stove Co., Chicago, Ill.
Pittsburgh Stove & Range Co., Pittsburgh, Pa.
Rathbone, Sard & Co., Albany, N. Y.
Richmond Stove Co., Norwich, Conn.
Sheppard, Isaac A. & Co., Phila., Pa.
Smith & Anthony Co., Boston, Mass.
Somerset Stove Fonndry Co., Somerset, Mass.
Stamford Foundry Co., Stamford, Ct.
Thatcher Furnace Co., 240 Water St., N. Y.
Walker & Pratt Mfg. Co., Boston, Mass.
Weir Stove Co., Taunton, Mass
Western Stove Works, Peoria, Ill.
White, Warner Co., Taunton, Mass.
Willard, Wm. G., St. Louis, Mo.

Stoves and Ranges. Gas.
Dighton Furuace Co., Taunton, Mass.
Howes, S. M. Co., Boston, Mass.
Metropolis Sheet Metals & Stove Repairing Co., Newark, N. J.

Stoves and Ranges. Oil, Vapor and Gasoline.
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Rathbone, Sard & Co., Albany, N. Y.

Tank Heaters.
American Radiator Co., Chicago, Ill.

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Edwards, J. H., 59 Park Place, N. Y.

Terne Plates.
American Tin Plate Co., New York.
Taylor, N. & G. Co., Phila., Pa.

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Berger Bros. Co., Phila., Pa.
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Keene, Geo. C. & Co., Cincinnati, O.
Meurer Bros. Co., Brooklyn, N. Y.
Niagara Machine & Tool Wks., Buffalo, N. Y.
Ohl, Geo. A. & Co., Newark, N. J.
Peck, Stow & Wilcox Co., 27 Mnrray St., New York.
Stiles & Parker Press Co., Brooklyn, N. Y.
Weiss, H. & Co., 20 Cliff St., N. Y

Tinners' Trimmings.
Vogel, Wm. & Bros. Brooklyn, N. Y.

Tin Plate.
American Tin Plate Co., New York.
Bruce & Cook, 186 to 190 Water St., New York.
Coe, Jas. A. & Co., Newark, N. J.
Follansbee Bros. Co., Pittsburgh, Pa.
Gummey, McFarland & Co., Phila., Pa.
McClure & Co., Pittsburgh, Pa.
Merchant & Co., Philadelphia, Pa.
Meurer Bros. Co., Brooklyn, N. Y.
Osborn, J. M. & L. A., Cleveland, Ohio.
Taylor, N. & G. Co., Philadelphia, Pa.

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Armstrong Mfg. Co., Bridgeport, Conn.
Curtis & Curtis Co., Bridgeport, Conn.
Saunders', D. Sons, Yonkers, N. Y.

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Clayton & Lambert Mfg. Co., Detroit, Mich.

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Crosby Steam Gage & Valve Co., Boston, Mass.
Jenkins Bros., 71 John St., New York.
Morgan & Co., Chicago, Ill.

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Buffalo Forge Co., Bnffalo, N. Y.

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Iwan Bros., Streator, Ill.

Ventilators and Chimney Caps.
Berger Bros. Co., Phila., Pa.
Buffalo Forge Co., Buffalo, N. Y.
Fenn, Geo. E., Boston, Mass.
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Kramer Bros., Dayton, O.
Merchant & Co., Philadelphia, Pa.
Meurer Bros. Co., Brooklyn, N. Y.
Washburne, E. G. & Co., 46 Cortlandt St., New York.

Washers, Valves, &c.
Marston, I. G. & Co., Boston, Mass.

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Wayne, Anthony Mfg. Co., Ft. Wayne, Ind.

Water Coolers.
National Enameling & Stamping Co., 78 Beekman St., N. Y

Water Closets.
Colwell Lead Co., 63 Centre St., N. Y.

Water Fronts.
Clark, Henry N. Co., Boston, Mass.

Water Heaters.
Kemp, C. M. Mfg. Co., Baltimore, Md.

Wind Gates.
Miner & Peck Mfg. Co., New Haven, Ct.

Window Frames, Metal.
Smith-Warren Co., Boston, Mass

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THE METAL WORKER.

With which is Incorporated The Stove and Tin Trade Journal, The Sheet Metal Builder, and Metal.

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Notices under this heading of reasonable length are inserted free of charge. Only those relating to employment are admitted. Write distinctly on one side of paper only, and do not use postal cards.

Original letters of reference should not be inclosed with replies to advertisements appearing in these columns as they are frequently mislaid and lost. A copy of the reference will serve the purpose.

HELP WANTED.

A man thoroughly understanding pattern cutting and the erection of architectural sheet metal work, as FOREMAN in a union cornice and skylight shop; must be practical and a man of experience, capable of at times handling from 20 to 30 men; references must be furnished as to ability and experience; a permanent position is open to such a man proving himself to be capable. "Jersey," care *The Metal Worker*, New York. May 24

A good all around man that understands plumbing and tinsmithing; work the year round; must give references. Morgan & Murray, Cadillac, Mich. May 24

Two good TINNERS, also two good SLATERS; good job for the right men. Apply to the Peet & Schuster Company, Springfield, Ohio. May 24

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SLATE and TIN ROOFERS; steady work for sober, reliable men; none others need apply; state wages wanted. A. C. Hathorne, Burlington. Vt. May 24

Young man who has had some experience at laying out heavy sheet and structural iron work. "Iron," care *The Metal Worker*, New York. May 24

At once, two first-class STOVE PATTERN FITTERS; steady work and good pay to right parties. American Stove, Range & Foundry Company, South Pittsburg, Tenn. May 24

At once, first-class TINNER, familiar with large size blower work, capable of drafting and making elbows and branches five feet in diameter. James Cockburn, Newberry, Pa. May 24

First-class TINSMITH; also first-class PLUMBER. Apply or write Paul Haller Cedarhurst, L. I., N. Y. May 24

First-class TINSMITH for all round work; steady job for right man. Peracy Bros., Ballston Spa, N. Y. May 24

TIN and SHEET IRON WORKER, with some knowledge of lead and iron pipe work; steady work for the right man; state wages wanted. M. Carney's Estate, Philmont, N. Y. May 24

At once, a first-class STOVE PATTERN FITTER; one who thoroughly understands his business; permanent position to the right man; state experience and wages wanted. Keystone Stove Foundry, Spring City, Pa. May 24

CORNICE CUTTERS at the bench; David Lupton's Sons, Allegheny avenue and Tulip street, Philadelphia, Pa. May 24

A competent man as FOREMAN of a brass foundry and finishing plant engaged in the manufacture of plumbers' brass goods. P. O. Box 42, Salem, N. J. May 24

Two or three good TIN PLATE and SHEET METAL WORKERS; to sober and industrious men can guarantee steady work at good wages. Fred W. Morse, Providence, R. I. May 24

A first-class PLUMBER; must be sober and quick; permanent engagement to right man; present wages, $3.25 for nine hours. Munson Bros., Connellsville, Pa. May 24

Six good SHEET METAL WORKERS. John Cruze, Knoxville, Tenn. May 24

Strictly first-class SUPERINTENDENT for tin can plant outside New York; all replies strictly confidential; splendid opening for right man. "Tin Can," care *The Metal Worker*, New York. May 17

AT ONCE.—A good, honest and sober man who understands heating, plumbing and tinning in all branches; a man who cannot wipe joints need not apply for this job; a steady job promised to right kind of man; we will pay good wages. "P. S.," care *The Metal Worker*, New York. May 17

Two good SLATERS and TINNERS; steady work; good wages. J. B. Crowe, Alliance, Ohio. May 17

CLERK; a retail hardware firm in a West Pennsylvania town of 12,000 wants an active, energetic clerk; one who has had experience in a general hardware store in a town of 5000 to 15,000 preferred, and who has good ideas about displaying stock and keeping it in shape; permanent position to right party; state salary expected; is a splendid, big storeroom and the town a very desirable one to live in. "Clerk," care *The Metal Worker*, New York. May 17

A competent TINNER; steady work the year round; good wages; apply at once. Paine Bros., Ashtabula, Ohio. May 17

At once, two first-class CORNICE MAKERS; $3 per eight hours; steady work. Elizabeth Cornice Works, Elizabeth, N. J. May 17

Two or three all around TIN and SHEET IRON WORKERS; must be sober; pay from $2.25 to $2.50 per day; regular work. A. J. Shide, 103 South Forsyth street, Atlanta, Ga. May 17

By the Master Tin and Slate Roofers' Association of Washington, Pa., men who can do TIN and SLATE ROOFING; open shops. Inquire of Jos. H. Brice, secretary, 222½ West Chestnut street, Washington, Pa. May 17

A good, reliable TINNER and SLATER; must be good on inside and outside work; steady work with good pay to the right man. James Rostron, Sidney, Ohio. May 17

Wanted, nonunion PLUMBERS; will pay $5.25 per day of eight hours; steady work for the right men; only first-class men need apply. A. M. Griffen, Plainfield, N. Y. May 17

Two good SKYLIGHT and CORNICE MAKERS. G. Drouve Company, Bridgeport, Conn. May 17

Young man in office of stove manufacturer; one who can use Smith Premier writer preferred; must know how to sell goods; opportunity for advancement. "N. 312," care *The Metal Worker*. New York. May 17

At once, a good, steady, sober, all around PLUMBER and TINNER; steady position to the right party; state age and wages expected. James Fitzgibbon, Red Bank, N. J. May 17

A first-class TINNER who can do assortment work; steady employment; state age, experience and wages wanted; married man preferred. Cooney & Geiger. Indianapolis, Ind. May 17

A first-class TINNER who can do all kinds of work in a shop, on buildings, furnace and blower work; steady work to a good man. Hoernel Hardware Company, Racine, Wis. May 17

First-class SALESMAN, having acquaintance with builders and architects in New York City, for ranges and furnaces. The J. L. Mott Iron Works, 84 Beekman street, New York. May 17

A good all around man that understands PLUMBING and TINSMITHING; work all year round; must give reference. Henry Schafer, 17 Central avenue, Albany, N. Y. May 17

An experienced PLUMBER, capable of making wiped joints and understand the reaction of furnaces, hot water and steam work; must be sober, a thorough mechanic, also capable of managing a shop; married man preferred. Davidson Heating & Construction Company, Hanover, Pa. May 10

SITUATIONS WANTED.

By a first-class PLUMBER'S HELPER having had two years' experience in first-class shops; honest, sober and reliable. Jacob Gunther, 328 Richmond road, Stapleton, S. I., N. Y. May 24

By young man (23) in tin or sheet iron shop where there is a chance of handling tools preferred; two years' experience. R. Paucek, 338 East Seventieth street, New York. May 24

A GAS FITTER, competent to work on galvanized and nickel pipe also; 35 years of age; strictly sober and reliable; wishes employment in country; can furnish best of references. Chas. H. Haegg, 167 East Thirty-third street, New York. May 24

Steady position by young man (25) as STEAM and GAS FITTER'S HELPER: three years' experience; willing to go anywhere or do any kind of work; experienced at store work and all kinds of repairing. Edw. Sommer, 116 Lawrence street, New York. May 24

As FOREMAN, by an experienced, first-class, A1 tin, copper and sheet iron worker; can furnish best of references to handling help to good advantage; quick, neat and accurate workman; understand all kinds of presses, dies and machinery; good experimenter; wages, $1500 a year; age 28 years; married; can start to work at once. Frank Allers, 387 Summit avenue, Jersey City, N. J. May 24

PLUMBER wishes position, city or country; licensed New York and Yonkers; capable of taking charge of work or shop; would work for builder or estate; open for any kind of proposition; state wages. T. Moran, 71 West Ninety-sixth street, New York. May 24

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By PLUMBER in country. Geo. Conlin, 499 West 124th street, New York. May 24

By an A1 TIN and SHEET IRON WORKER; proficient in all branches of the trade; inside work in New York City preferred; sober, steady and reliable; A1 references; moderate wages. F. M. La Sœur, 77 Barrow street, New York City. May 24

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By first-class WARM AIR HEATING ENGINEER, either mechanical or gravity systems; competent to estimate from plans and take charge of men or shop; am good sheet iron worker and practical draftsman on heating work; young man, 32 years old, married, reliable in every way; best of references as to ability and mechanic. "Heat," care *The Metal Worker*, New York. May 24

By a young man of good habits in a hardware store; understand plumbing and tinning; 2½ years' experience in tin shop; can clerk in store; best of references; state wages. C. J. Cunningham, P. O. Box 260, Dushore, Pa. May 24

MODELER for architectural work, statuary, ceiling, ornaments and circle work; can act as foreman and erect new stamping plants; good estimator; can read plans; wages reasonable. "Artist," care *The Metal Worker*, New York. May 24

A first-class PLUMBER will be open for engagement at the end of May; seek steady position or job in city or country; thoroughly capable; understands plans and the laying out of work; good steam and hot water fitter; 18 years' experience: sober and steady. G. Graham, Frainer place, North street, New Rochelle, N. Y. May 24

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As SUPERINTENDENT of sheet metal and slate work; long experience as cutter and manager of help; strictly sober and reliable; accurate in estimates from plans; coast city preferred. "American," care *The Metal Worker*, New York. May 24

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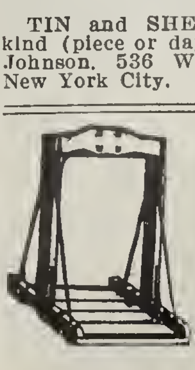
TIN and SHEET IRON WORKER, any kind (piece or day) or general jobbing shop. Johnson, 536 West Twenty-seventh street, New York City. May 17



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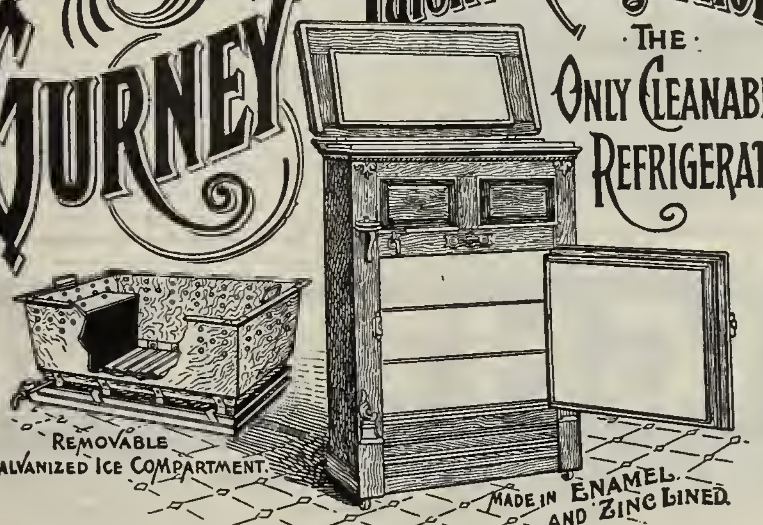
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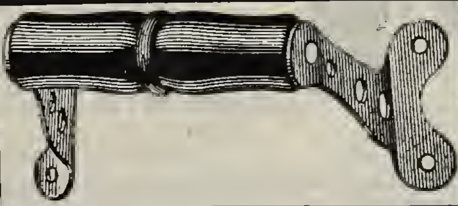
THE HIGHEST IN QUALITY.		WRITE FOR PRICE.
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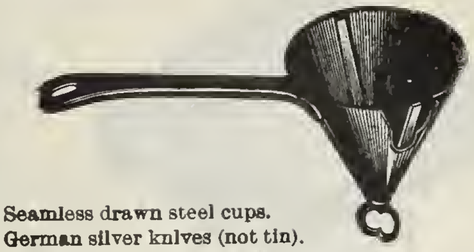

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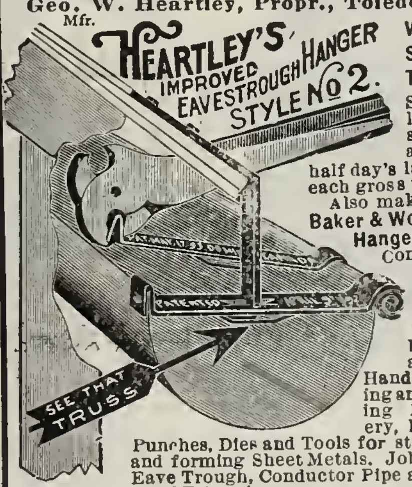
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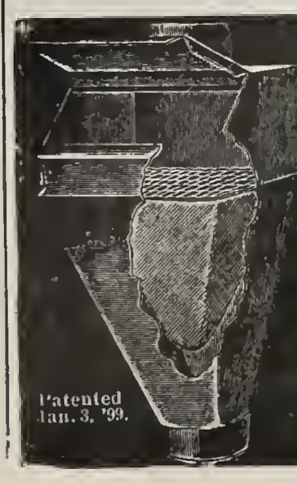
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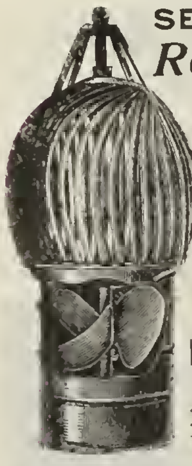

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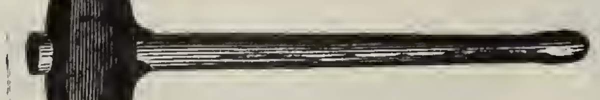

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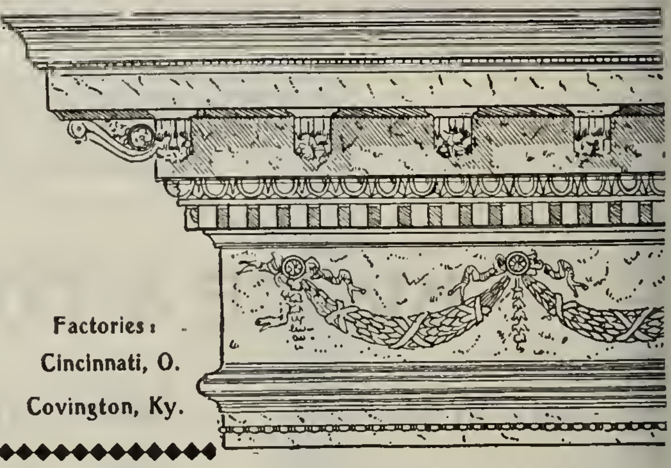

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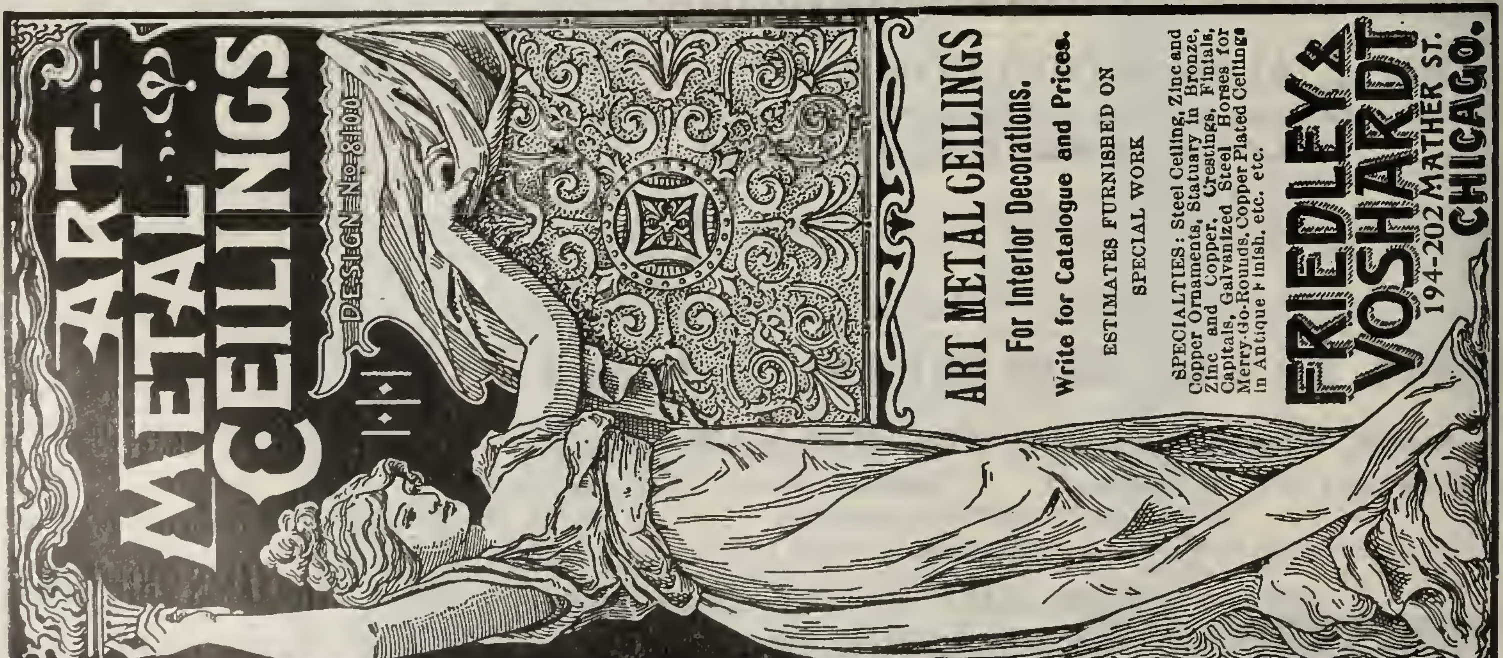

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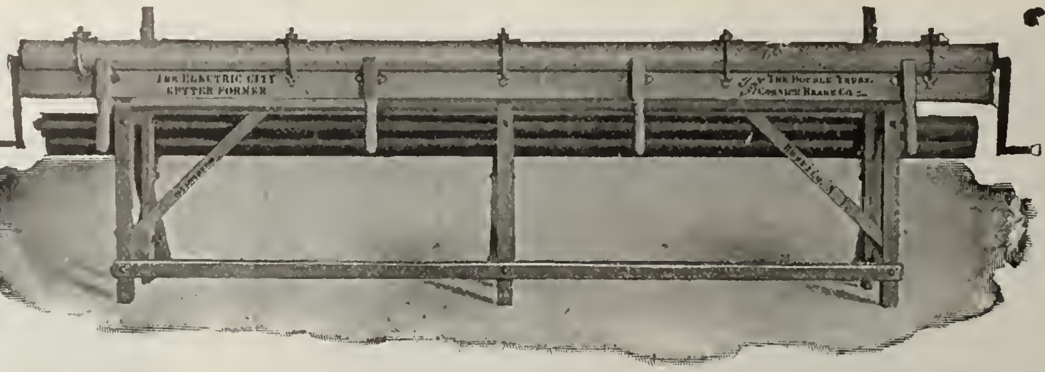

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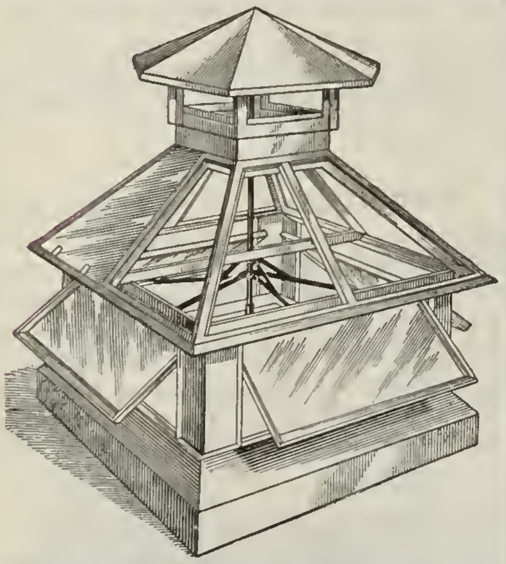

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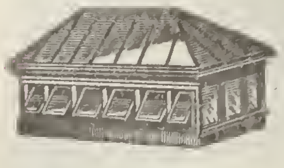

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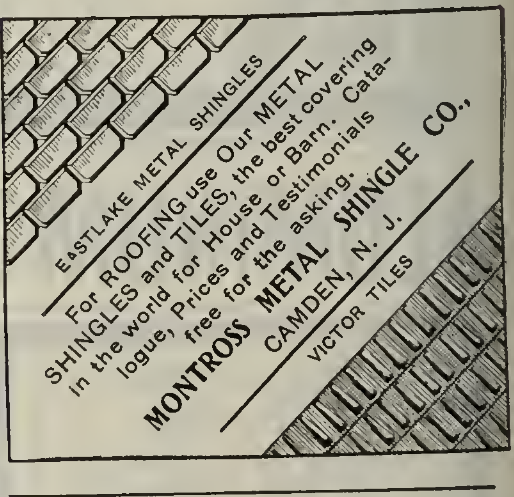

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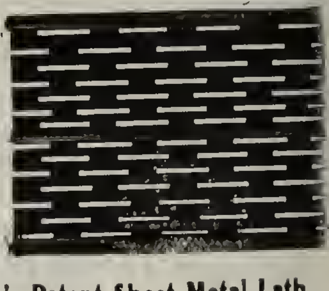

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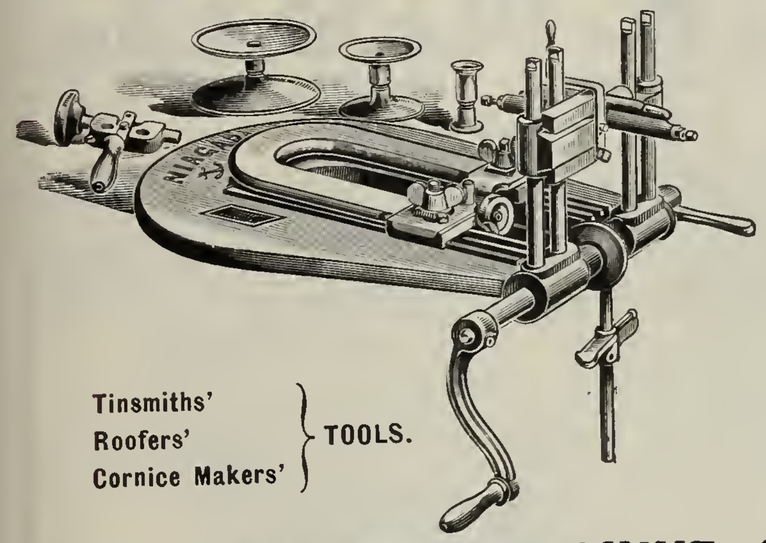

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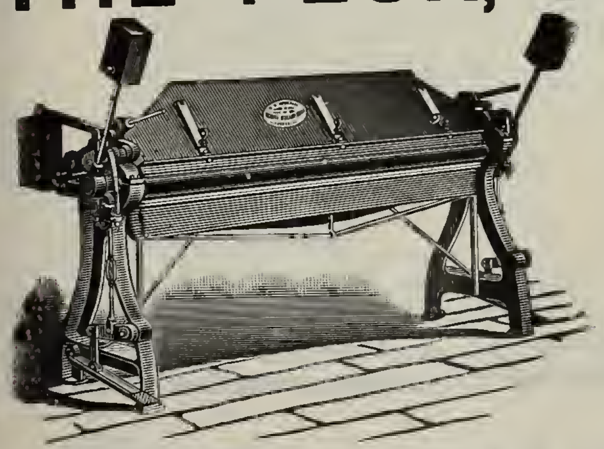

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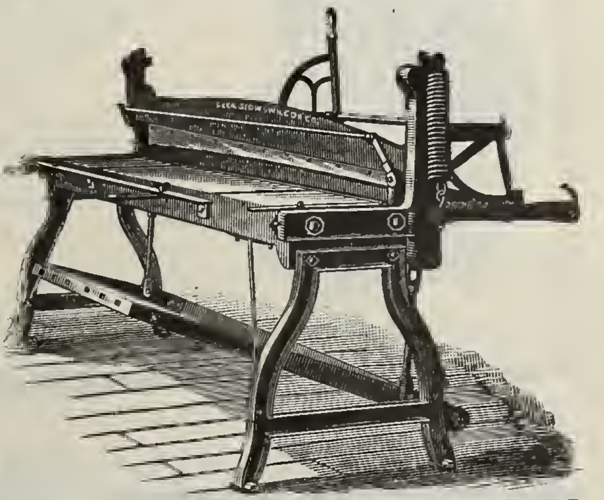

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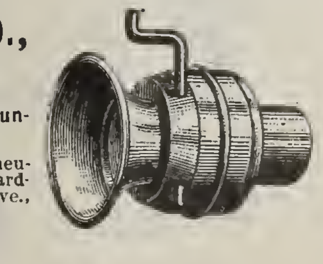

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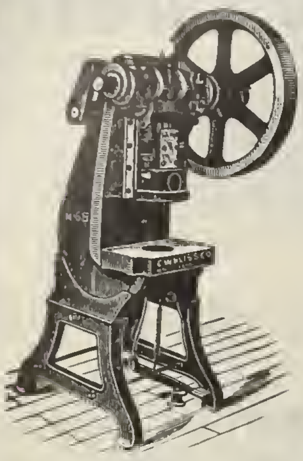

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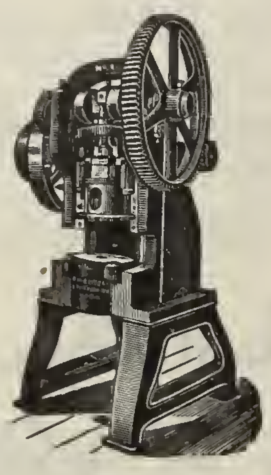

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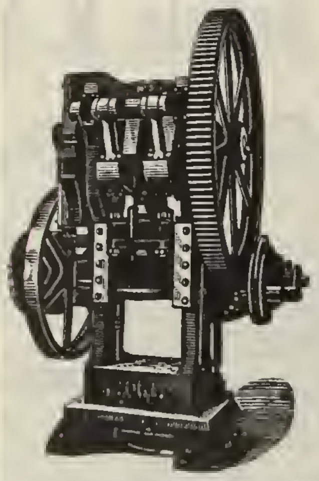

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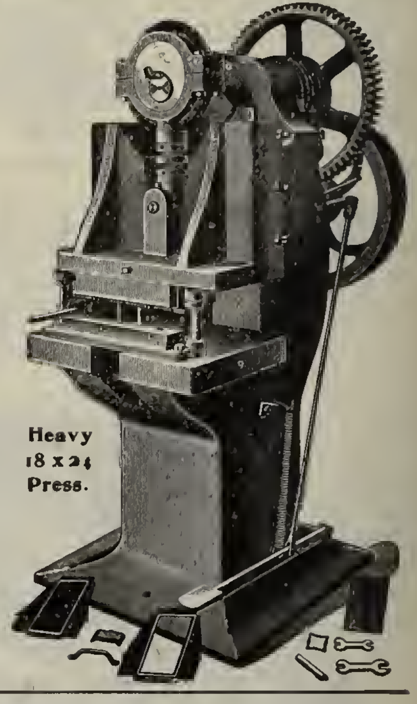

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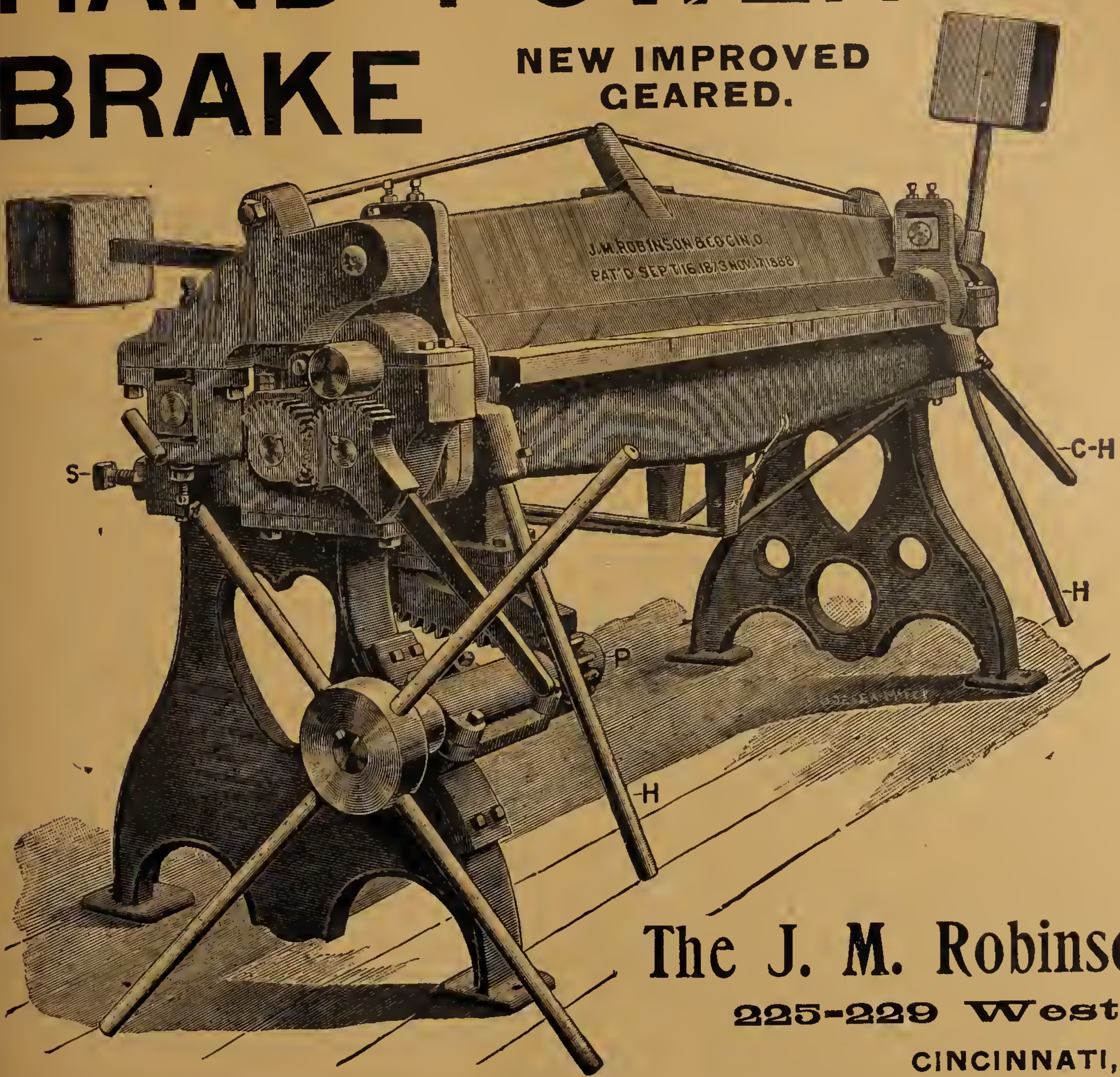
NEW IMPROVED GEARED.


J. M. ROBINSON & CO. CIN. O.
PAT'D SEPT. 16. 1873 NOV. 17. 1888
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6 AND 8 FOOT.

Will bend No. 14 gauge and lighter, or when double geared with hand power will bend No. 10 gauge in 6 and 8 foot lengths. Write for descriptive circular and prices.

The J. M. Robinson Mfg. Co.,
225-229 West 2nd St.,
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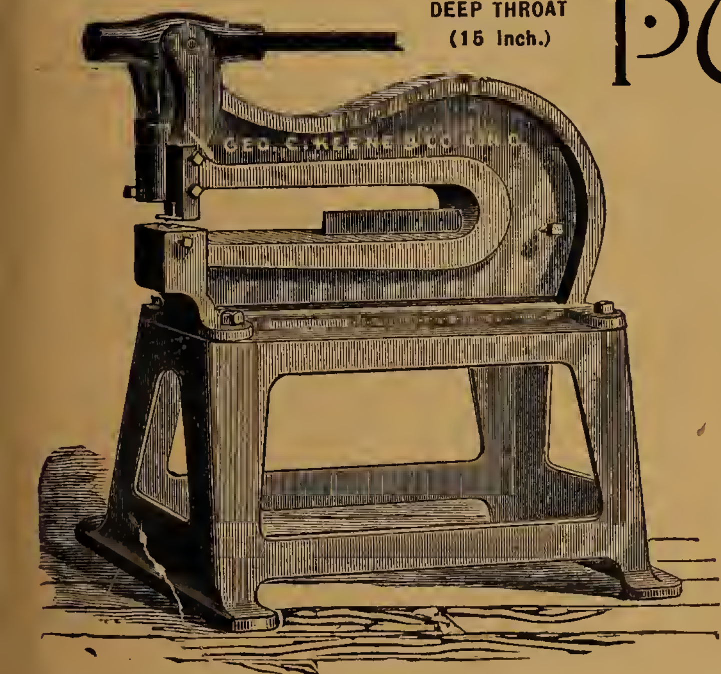
DEEP THROAT (15 Inch.)
GEO. C. KEENE & CO. CIN. O.

PUNCH.

Double Action.

Strong, easy of operation, cheap. Will punch ¼ inch hole through No. 10 iron or steel and lighter.

GEO. C. KEENE & CO.,
Mfrs. The Keene Brake,
CINCINNATI, - OHIO

20th Century Groover

for **Hand Power.** We also make them for **Belt Power.**

20th CENTURY GROOVER. Handiest out.

Operated from one position. Automatic knock-out and *Quick Return.* Grooves 22 gauge. Write for circular. Made by
W. A. WHEELER, Indianapolis, Ind.

IMPROVED

Patent Automatic Can Body Double Lock SEAMING MACHINES

COMBINATION PRESSES and DIES,
SHEET METAL TOOLS.

W. J. GORDON,
218 New Street,
PHILADELPHIA, PA.

IMPROVED SLIP ROLL

FORMING MACHINE,

Send for Catalog and Prices.

With lifting device for upper roll. Single or double back geared. With or without legs. Arranged for both hand or power as desired.

We make a specialty of 24 to 30 inch Squaring Shears.

OLIVER POCOCK,
1073-1075 Clark St.,
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PHILADELPHIA MACHINE TOOL CO.,
445 North Darien St., Phila., Pa.
TESTING MACHINES and
SOLE AGENTS for HENNING
TESTING APPARATUS.
PRESSES and SHEARS, CORNICE PRESSES
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Plant! Maybees! Flowers!

Last week we gave you a glimpse of our two-acre plant.

MAYBE

You have had some of its FLOWERS? If so, you know their quality and beauty.

MAYBE

You haven't? In either case we invite you to call and inspect our complete line of RANGES, HEATERS and FURNACES.

BARSTOW STOVE CO.

BOSTON PROVIDENCE, R. I. NEW YORK

TAYLOR OLD STYLE

The tin that resists all conditions of weather and atmosphere.

Your roof is sound for all time if covered with this brand of tin.

N. & G. TAYLOR CO.,
Sole Manufacturers,
PHILADELPHIA.

CLUSTER REFLECTORS

In a great variety of sizes and shapes for lighting stores, store windows, schools. offices, hospitals. banks, libraries, etc. Made well. Reflect well. Last well.

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L. & R. WISTER & CO.,
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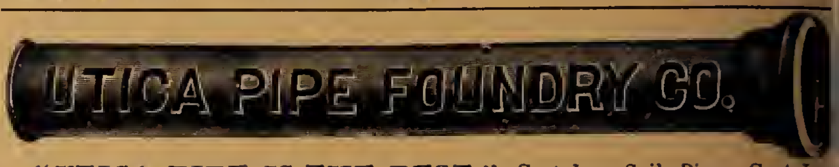
Dunbar Foundry Pig Iron.
Dunbar Connellsville Coke for Foundry Use.
American Sheet Iron Co.'s Sheet Iron.
American R. G., cleaned of uniform black color.
Dealers in all kinds of Iron and Steel Scrap.

BRUCE & COOK

TINNERS'
TOOLS and MACHINES.
TINNERS'
SUPPLIES

186, 188 & 190 Water Street, an
248 & 250 Pearl Street,
NEW YORK.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"UTICA PIPE IS THE BEST." Cast Iron Soil Pipe. Cast Iro Water Pipe. Plumbers' Supplies and Lead Pipe.
CHARLES MILLAR & SON CO., Selling Agents, Utica, N. Y

HUB RANGES

If you want the best line; the line with the **most attractive** and progressive selling features, look into the merits of the

Hub
Line of Ranges,
Steam and Water Heaters;
Hot Air and Combination Furnaces.

SMITH & ANTHONY CO., Boston.

Building a Business

on meritable goods is the motto of the man who handles the Glenwood line. He knows their reputation and quality. He knows that every part of a Glenwood range or heater is fitted and finished like a piece of machinery. He knows that every Glenwood sold means a satisfied customer–that's why it's business and a pleasure to handle

GLENWOODS.

Write the Weir Stove Company, Taunton, Mass.

INCREASING DEMAND
TELLS THE STORY. . .

McClure's Genuine Charcoal Iron Redipped Roofing Tin.

McCLURE & CO.,
Manufacturers of Tin Plate,

PITTSBURGH, PA., 211, 213 and 215 Second Ave.
PHILADELPHIA, PA., 115 North 7th Street.

Index to Reading Matter, Page 54. Index to Advertisements, Pages 56 - 58

The Metal Worker

A WEEKLY JOURNAL OF THE STOVE, ROOFING, CORNICE, TIN, PLUMBING AND HEATING TRADES.

With which is Incorporated The Stove and Tin Trade Journal, the Sheet Metal Builder, and Metal.

LVII.
ER 22.

NEW YORK AND CHICAGO, MAY 31, 1902.

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Vith a GRIP that GRIPS without Marring the Pipe.

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OUR CATALOG OF ENGINEERS' AND STEAM FITTERS' TOOLS WILL INTEREST YOU.

ALWORTH MFG. CO. *Boston, 128 Federal St.*
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The Gorton Side Feed Boilers

FOR STEAM AND HOT WATER HEATING.

INVESTIGATE FOR YOURSELF.

Send for Catalogue and Prices.

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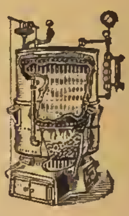
77 Oliver St., BOSTON. Prudential Bldg., ATLANTA, GA.



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McLEOD & HENRY CO.,
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AMERICAN STEAM and ALTITUDE GAUGES, POP SAFETY VALVES.

Heating Specialties. American Steam Gauge & Valve Mfg. Co., Bismark St., Boston, Mass., U. S. A.

ARE YOU TIED

down to the use of goods that will not behave themselves no matter how well you install them? Sorry, if you are. Our advice is, break loose as soon as you can and get the agency for Paragon Furnaces and Boilers and Excelsior Ranges. These goods will conduct themselves in a gentlemanly manner and make friends and money for you.

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POLLO BEST BLOOM
GALVANIZED IRON

What is the standard

lvanized iron?

Apollo.

rican Sheet Steel Company, New York

Why not increase your trade over last season?

P. P. STEWART STOVES

will help you do it
Write for prices on the style in which you are most interested

FULLER & WARREN CO, Troy, N. Y.

This Ad. changes every week.

NOTICE.

Silver, Nickel Platers and Brass Goods Mfrs. MATERIAL FOR DRYING PURPOSES.

Write for prices to John Sommer's Son, 355-365 Central Ave., Newark, N. J.

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All working parts renewable without taking the valve from piping. All parts interchangeable. Guaranteed not to leak at high pressure. Send for circular.

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328-330-332 Second Ave.,
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Galvanized and Black Sheets.
Sheet Copper, Conductor, Eave Trough.

FOUR WINNERS:
Follansbee Pure Iron Old Style,
Scott's Extra Coated,
Old Reliable Redipped,
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Philadelphia, 133 Arch Street.
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IEF and VATOR VALVES, AM TRAPS, AM AND WATER UCING VALVES, NOISELESS BACK PRESSURE VALVES, PUMP GOVERNORS, STEAM and OIL SEPARATORS, K TEMPERATURE CONTROLLER and A No. 1 DAMPER REGULATORS

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JENKINS IMPROVED AUTOMATIC AIR VALVES.

Suitable for high or low pressure. Take no more room than an ordinary air cock. Endorsed by the leading steam experts as the best made and the quickest working. All genuine stamped with our Trade Mark.

JENKINS BROS., New York, Boston, Chicago, Philadelphia.

READ OUR "AD" Page 6.

MAGEE FURNACE CO.,
Boston.

ROUND OAK
STANDARD of AMERICA

We are pleased
to inform our customers
and the world at large
that the sales of
the famous

Genuine Round Oak
Heating Stove

up to this date
are largely in excess
of any year
in its history.
This is the stove
"that has no ashpan"
that some people call
"a back number"
"old-fashioned" etc.,
still—
it leads in sales
every heating stove
on earth.
Funny, isn't it?
Some stove people
can't understand it.
By the way,
is it sold in your town?

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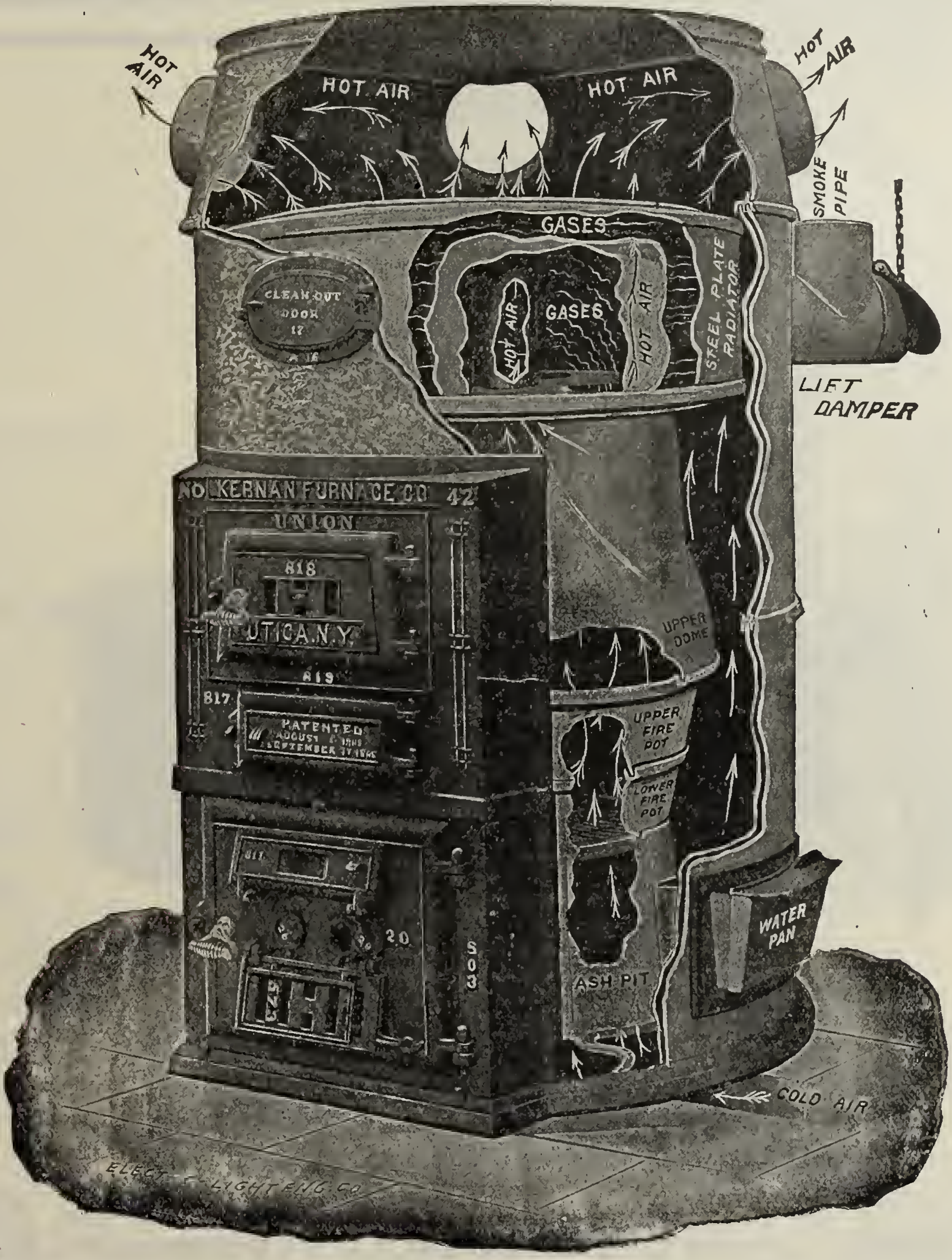
DOWAGIAC, MICH.

Makers of Good Goods only

ROGERS & WELLS, CHI.
F.B.S.

Sell Good Goods and Build up an Enduring Confidence Among Your Customers, It's Far Better in the Long Run, as You Know.

The KERNAN UNION WARM AIR FURNACE.



A highly scientific apparatus with very many strong "Talking Points."
It is easily operated and very durable.
When it's sold, it stays sold. No "Back Talk."

A Thoroughly Good Furnace at a Moderate Price.

INTERNATIONAL HEATER CO.,

LARGEST MAKERS OF HEATING AND LIGHTING APPARATUS IN THE WORLD
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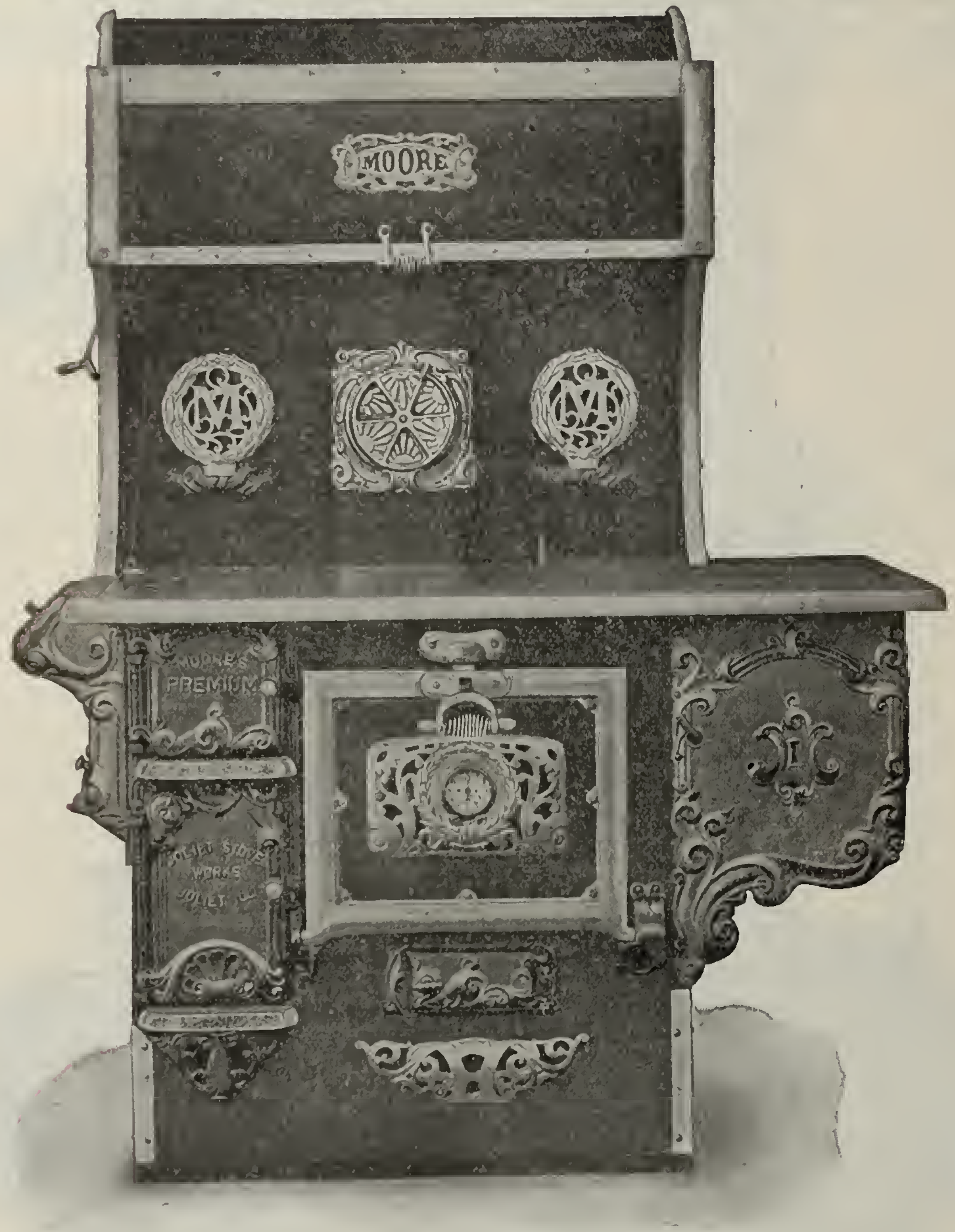


There is a STYLISH ATTRACTIVENESS about

MOORE'S RANGES

Which, added to their well-known record for doing good work and durability, makes them easily

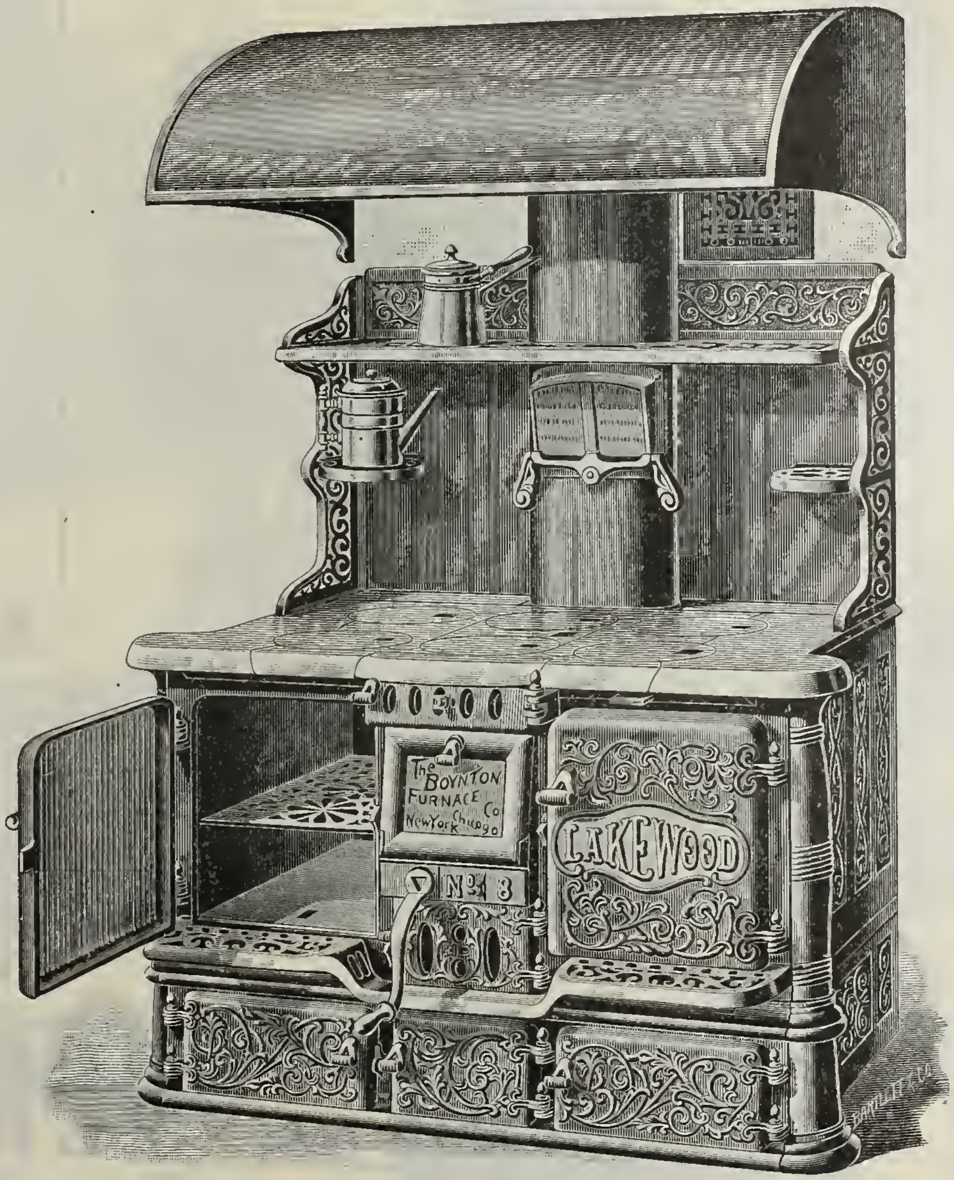
"The Easy Line to Sell"

JOLIET STOVE WORKS, Joliet, Illinois.

37

RANGES

Manufactured by us are being used daily in thousands of the finest homes in all parts of the United States.


The Boynton Furnace Co New York Chicago
No 3
LAKEWOOD

Do You Handle Them?

Dealers can obtain from us the most comprehensive line of Cast Iron Cooking Ranges made in the United States.

We manufacture different grades, can quote desirable prices and fill orders promptly.

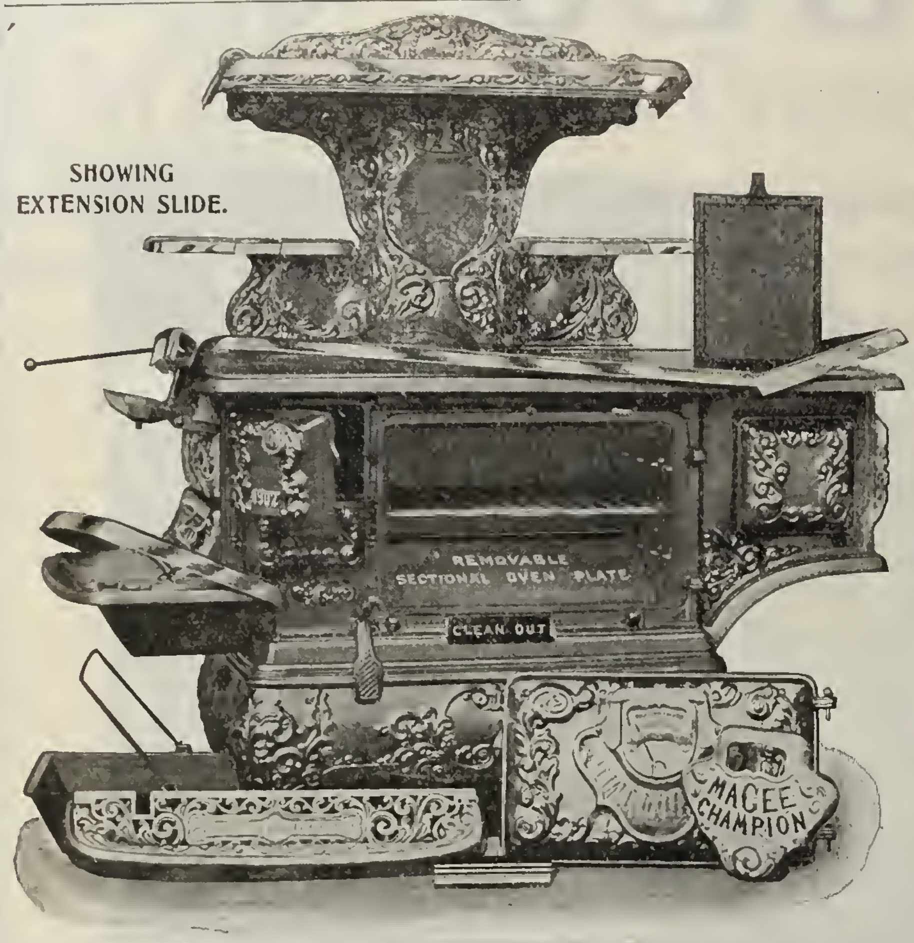
Write for prices on Ranges, Steam and Hot Water Heaters or Furnaces.

The BOYNTON FURNACE CO.,

NEW YORK, CHICAGO.

MAGEE CHAMPION.

—OUR LATEST ADDITION.—



FOUR STYLES OF GRATE. OVEN HEAT INDICATOR.

Open View

Showing how easily the nickel guard-rails, etc., can be removed for cleaning or blacking the range; also showing the removable **Bottom Oven Plate**, made in two pieces, with **locked square edged plates**, always flat and level. Notice the manner of fitting, which makes it absolutely tight.

Not Like Others— Better Than Others.

A half century's experience has taught us how to produce something better than the "other fellow." We make good goods because we can't help it.

Write for further information, prices, etc.

Magee Furnace Co.,

MAKERS

Cooking and Heating Apparatus since 1856.

32-38 UNION ST., BOSTON.

OUR IMPROVED HERO Ranges

ARE VERY ATTRACTIVE.

Furnished in Several Sizes and Styles.
Heavy and Well Made.
Perfect in Operation.

OUR VERY POPULAR

FAULTLESS Ranges

Cannot be Surpassed.

Send for Range Catalogue

THE GRAFF FURNACE CO.
208 WATER ST. NEW YORK

GOOD LUCK

Cooking
Stove

Burns hard coal, soft coal, wood.

Full size ovens. Perfect nickle finish. Attractive in every particular.

We have an attractive price proposition. Write for it today. :: :: :: ::

Pittsburg Stove & Range
Company
PITTSBURG, PA.

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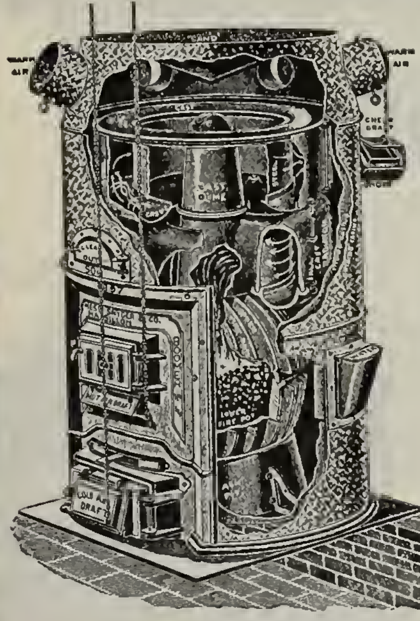
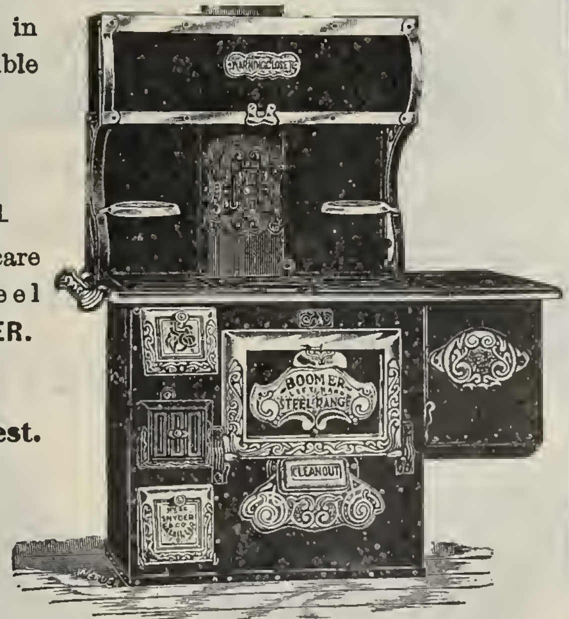
Boomer Furnaces.
OR
Boomer Steel Ranges

We want to state in strongest terms possible that if you want the
HEAVIEST,
MOST DURABLE,
MOST ECONOMICAL
and easiest to take care of Furnace or Steel Range, buy a BOOMER.



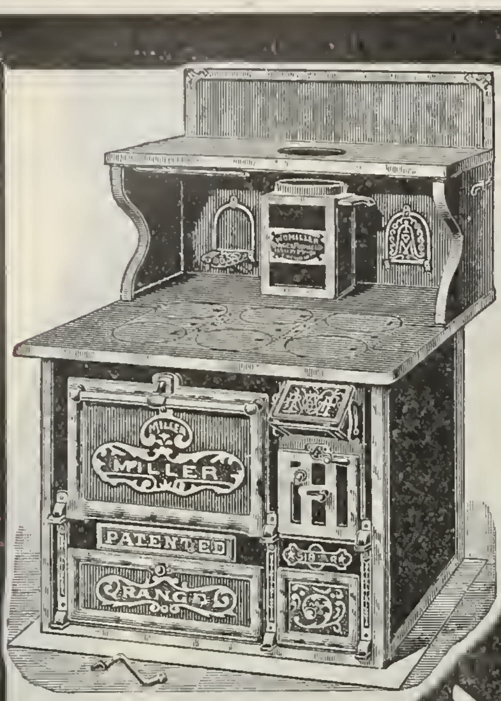
Boomer Furnace.



Boomer Steel Range.

Neither time nor money is spared to make them the Best.
Buy Boomers and save your coal bills.
We invite investigation.

THE HESS-SNYDER CO.,
Manufacturers, MASSILLON, O.



WITH Improved removable Duplex Grate, Improved Water Back for heating water, Flue Lined with Pure Asbestos Board, New Non-Warping Oven Bottoms, Cold-Handled Gravity Latch, Drop Oven and Feed Door, Patent Double Centers, Reguluating Damper, Nickel-Plated Towel Rod.

Nickel Bands on doors are ventilated to prevent tarnishing, and body of Ranges is highly finished.

GEM-MILLER RANGES

All bright parts Nickeled instead of Polished.

The
Wm. Miller
Range & Furnace Co.

125 and 127 E. Fifth St.
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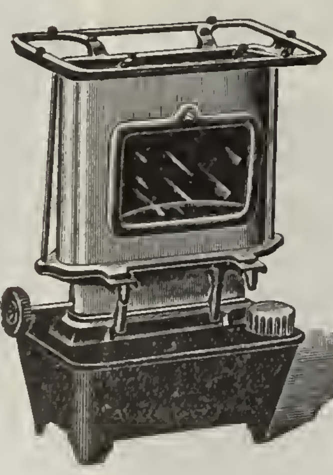
THE TAYLOR & BOGGIS FOUNDRY CO.,

MANUFACTURERS OF

LIGHT GRAY IRON CASTINGS.



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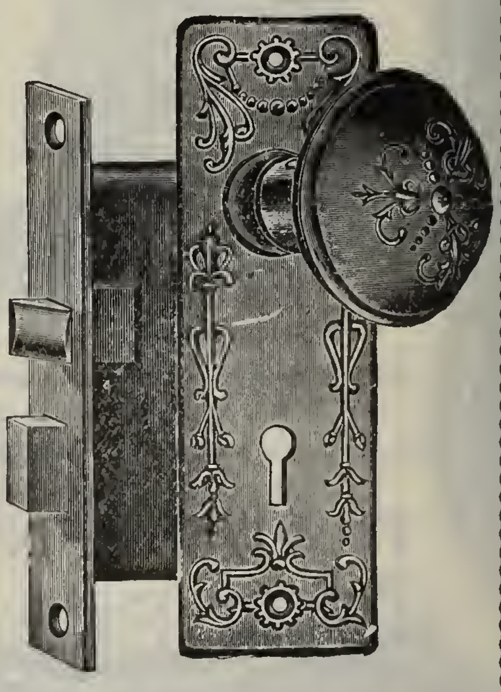
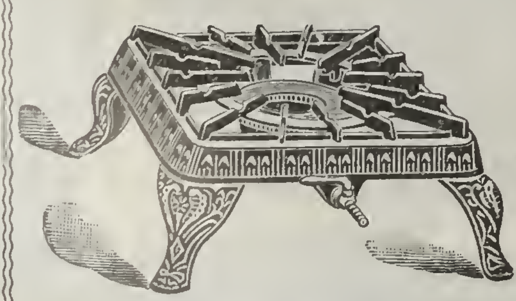
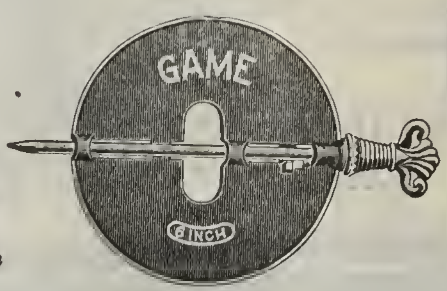
CLEVELAND, O.

"Hudson" Design.







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Our New Ideal Premier Tank Heater

is now ready for the market, and we invite your critical examination of its various features of construction.

Send for 1902 profusely illustrated catalog.

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Lake and Dearborn Streets,
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New York. Philadelphia. Buffalo. St. Louis. Minneapolis. Denver.

CITY BUCKEYE RANGE.

For Hard, Soft Coal, Wood or Coke.

MADE IN 17 AND 19 INCH OVEN.

Square Top and Bracket Reservoir Fitted with Water Heater.

AN ATTRACTIVE PIECE OF GOODS AND . . .

A Ready Seller.

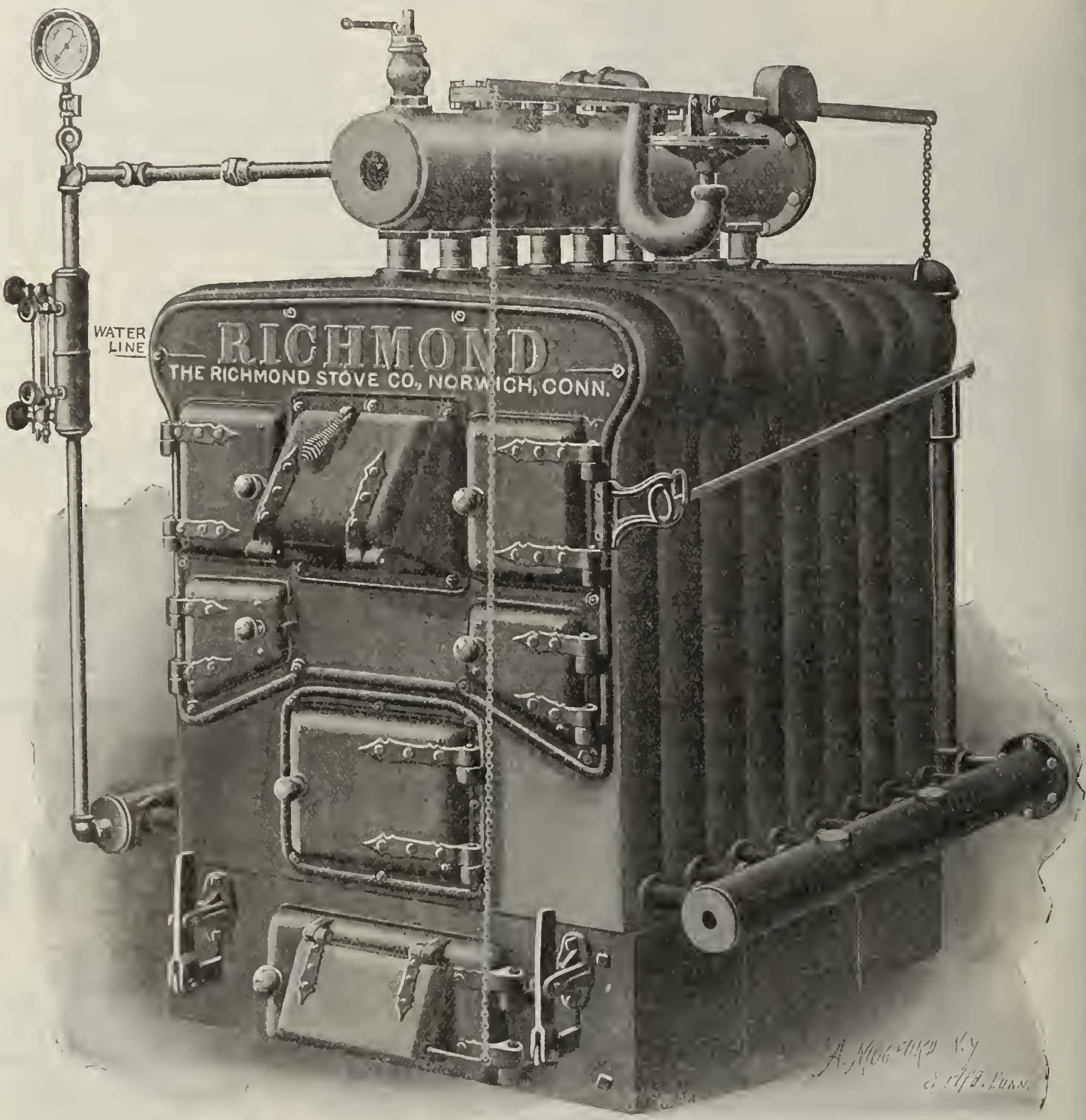
Write for Descriptive Catalogue and Prices.

OHIO STOVE CO.

Portsmouth, Ohio.

RICHMOND

Heaters that HEAT.



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RICHMOND
THE RICHMOND STOVE CO., NORWICH, CONN.

Get in line and be up to date in the boilers you buy as you are in other things.

WRITE TO-DAY FOR CATALOGUE X,
And learn something about our New Heaters that HEAT.

The Richmond Stove Company, NORWICH, CONN.

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PHILADELPHIA, 18-24 S. 7th St.
PITTSBURG, 210 Ferguson Bldg.
CHICAGO, Chicago Heater & Supply Co.
ST. LOUIS, Rumsey & Sikemeier.

THE H. B. SMITH CO.,

WESTFIELD, MASS., U.S.A.

Catalogue furnished only upon application to

Heating Contractors, Engineers and Architects

92 Pages. Size 9 x 12 Inches.

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STEAM BOILERS (8 SIZES), 550 SQ. FT. RADIATION SUPPLIED.
WATER BOILERS (8 SIZES), 900 SQ. FT. RADIATION SUPPLIED.

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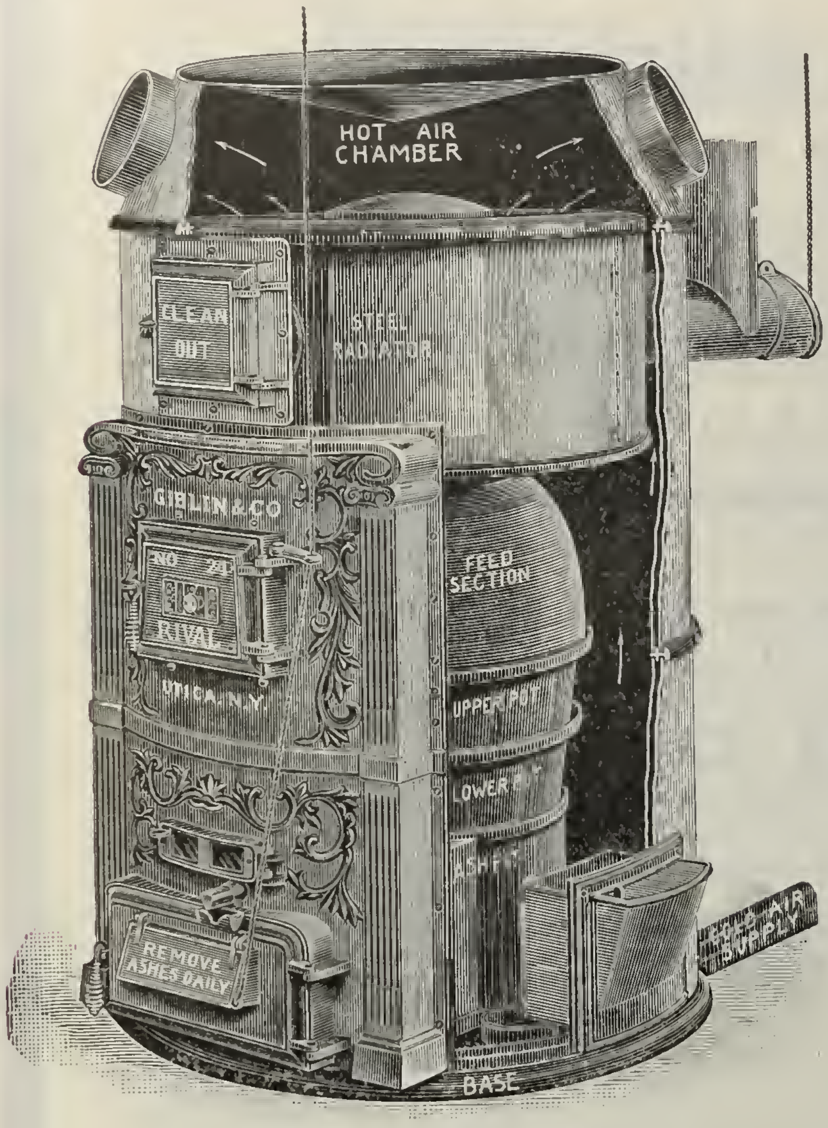
FIVE HUNDRED DEALERS



in the United States have sold **RIVAL** furnaces for the past fifteen years and are selling them now. They have allowed other dealers to put in the **CHEAP WORK** and have given their customers

RELIABLE FURNACES

wisely installed and thoroughly efficient in operation. Where **RIVAL** furnaces have been sold the general tone of a furnace business has been advanced to a higher level. Where they have not been sold the furnace business has been in disrepute. Dealers that have had an unsatisfactory business during the past year, have had

MUCH TROUBLE and LITTLE PROFIT

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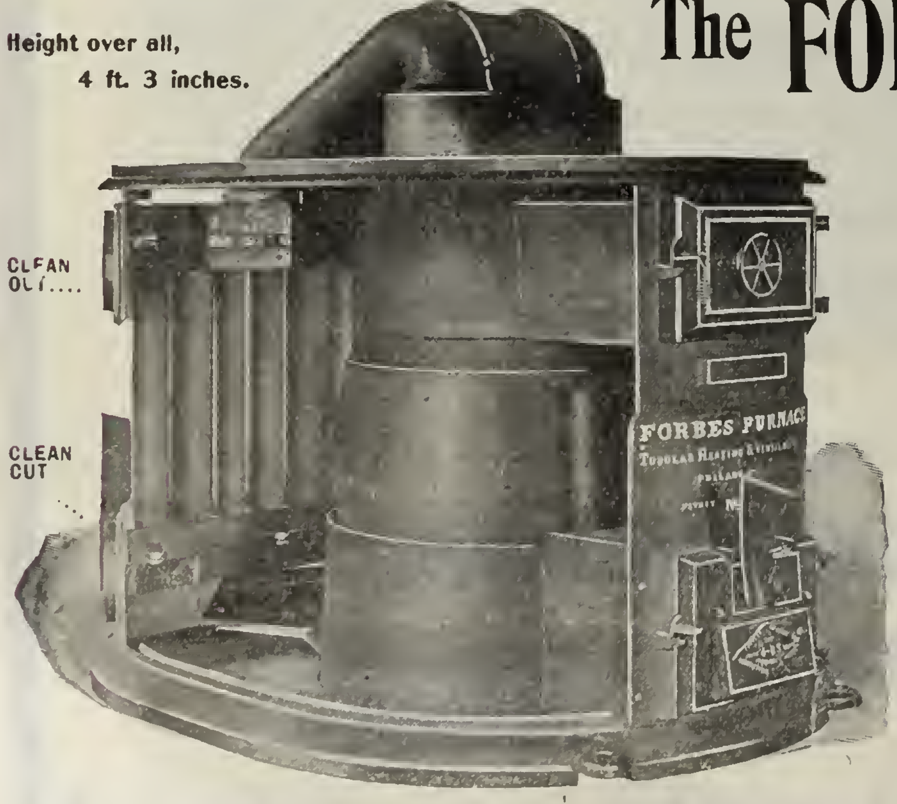
GIBLIN & CO.,
UTICA, N. Y.

The FORBES FURNACE.



You run no risk in putting in the

Forbes Furnace.

When properly installed we guarantee them in every case.

They are constructed entirely of cast iron.

No sheet iron drums.

Our radiating tubes are ⅛ in. thick, and will wear for years.

Specially suited for low cellars.

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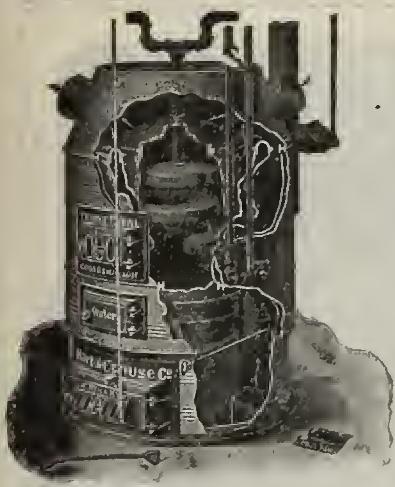
BRAND STOVE CO.

STOVES, RANGES and FURNACES.
SEND FOR CATALOG.
MILWAUKEE, WIS.



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HART & CROUSE CO.,

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New York.

78 Lafayette St.,
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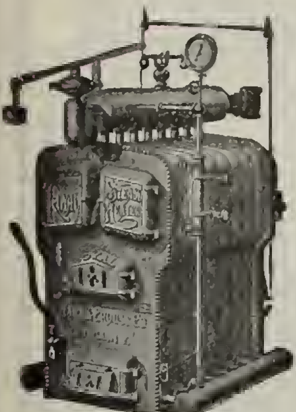
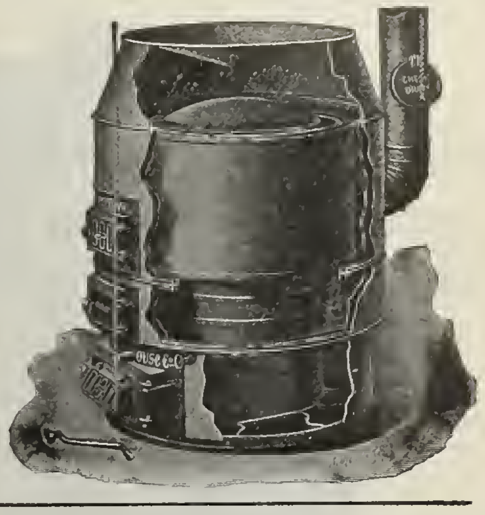
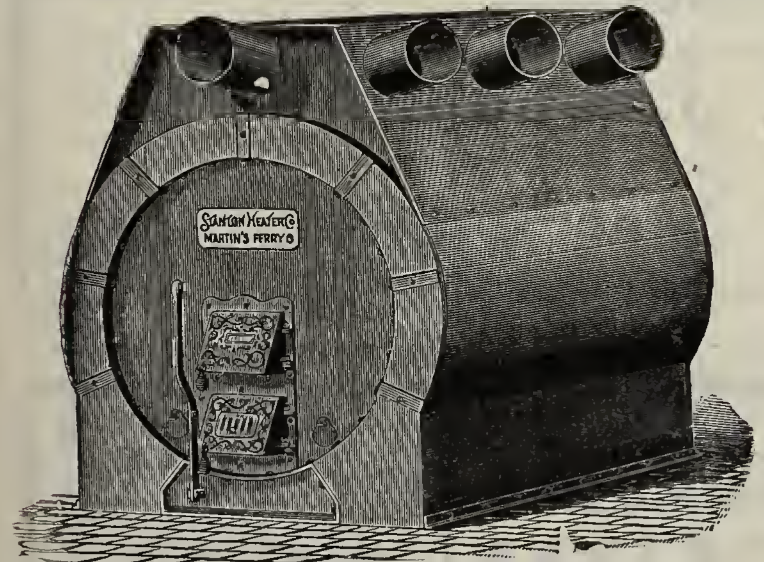
The Leading Line of Heating Apparatus.

HOT WATER,
STEAM,
HOT AIR.





The Stanton Seamless Heater,



PORTABLE CASED.

West Liberty, Ia., June 22, 1900.

The Stanton Heater Co.,
Martin's Ferry, Ohio.

Gentlemen:—I had a Stanton Seamless Heater put in my house last year and it gives perfect satisfaction. Have no trouble in keeping the whole house comfortable in the coldest weather.

Anyone wishing a furnace will not make a mistake in buying a Stanton Seamless Heater.

Yours Truly, Dr. L. W. STRUBLE

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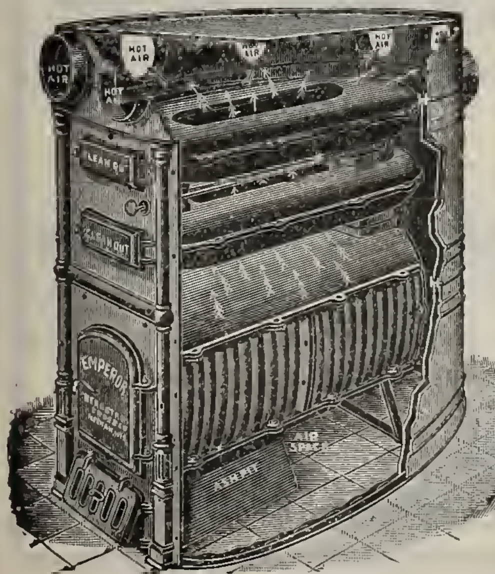
THE STANTON HEATER CO.,
Martin's Ferry, Ohio.

See Our Advertisement Next Week.



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FOR WOOD.

Simple, Safe, Durable. Economical in Fuel.

The Best and Cheapest Line of Wood Furnaces. . . .
Furnished for either Brick or Galvanized Iron Casing

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NEENAH, WIS.

For Wood or Coal.

MUELLER

Furnaces and Boilers

ARE MADE IN BUT ONE QUALITY,

THE BEST.

All Styles—For All Kinds of Fuel.

WRITE FOR CATALOGUE AND PRICES.

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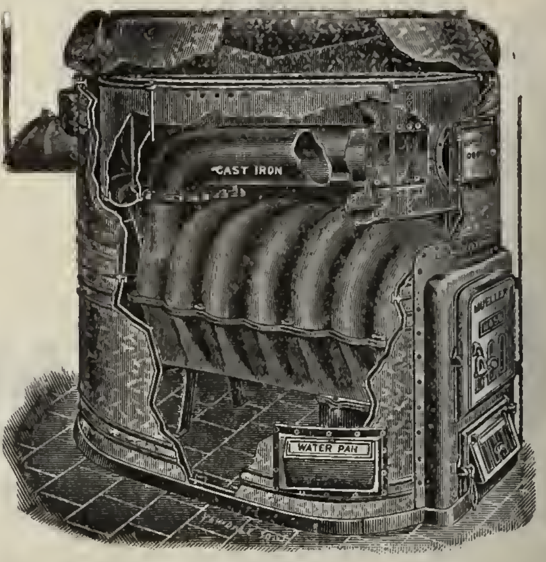
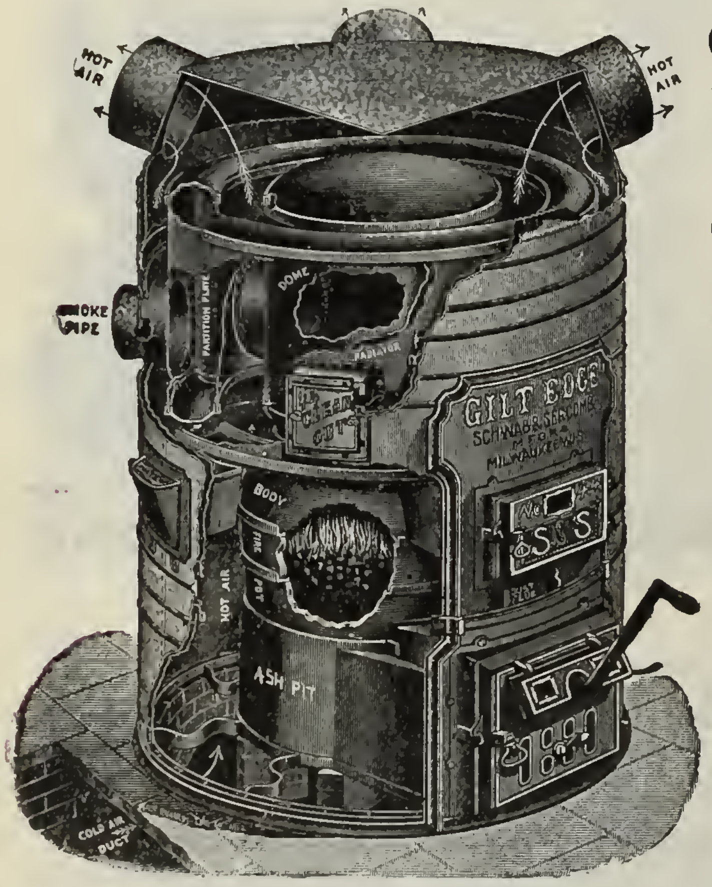


For Long Wood.

ESTABLISHED 1857

L. J MUELLER FURNACE CO.,

190 REED ST.,
MILWAUKEE, WIS

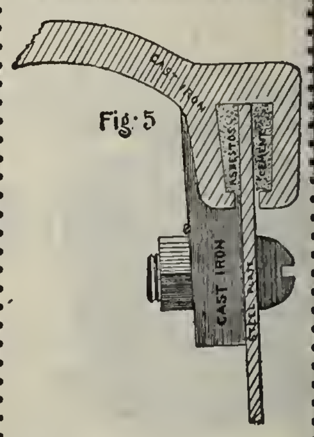


Gilt Edge Warm Air and Combination Heaters

have merits that are all their own. They are made in a large variety of styles and sizes, each adapted especially to a certain class of fuel. Our line is "gilt edge" in every sense of the word. Every furnace we make is correctly made in accordance with right principles, and the price is right. Kindly write us for catalogue.

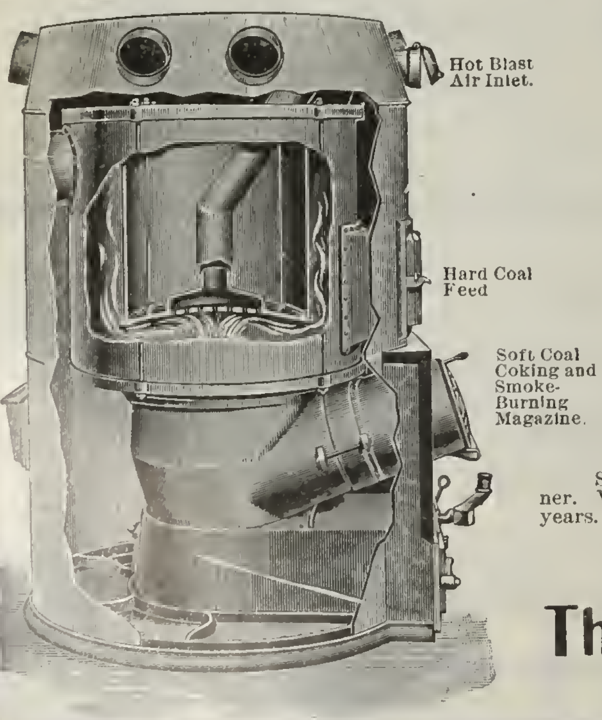
R. J. Schwab & Sons Co.,

Milwaukee, Wis.



Patented.

The Keystone Joint used on Gilt Edge Furnaces is the only permanent gas-tight steel and cast iron joint on the market.


Hot Blast Air Inlet.
Hard Coal Feed
Soft Coal Coking and Smoke-Burning Magazine.

THE PATRIC FURNACE

IS A COMBINATION OF

GOOD THINGS

For the Dealer and User.

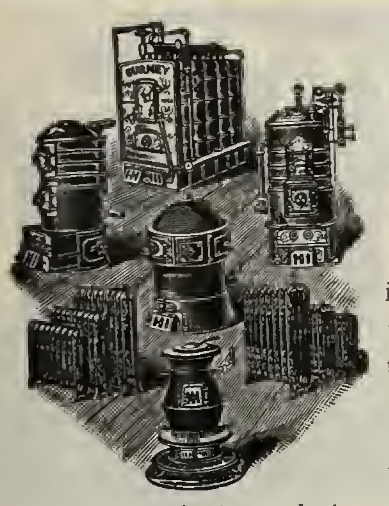
Scientific and Simple in construction. The Coking and Smoke-Burning is a trade-winner. Very economical. Has an efficient Hot-Blast. Exceedingly durable. A success for 29 years. Easy to sell. Easy to operate. Easy to install.

Let us send you a catalogue that tells you all about it.

The Patric Furnace Company,

SPRINGFIELD, OHIO.

YOU NEED THEM.



Some one has said "We need all and all need us." We're sure you need

"GURNEY" HEATERS,

Bright Idea, Doric and 400 Series,

if you would make the most of your business, because the "Gurney" possesses those attributes which appeal strongest to heater buyers; the ability to cut down the coal bill, to furnish the largest amount of heat possible from the fuel consumed as well as the ability to wear several years longer than other heaters.

You may not be able to get business with some heaters, but the dealers who handle the "Gurney" never have any trouble. Weigh this fact carefully, then write for particulars relative to an agency.

Gurney Heater Mfg. Co.,

74 FRANKLIN ST., BOSTON. **111 FIFTH AVE., NEW YORK CITY.**

Western Selling Agents, James B. Clow & Sons, 358 Franklin St., Chicago, Ill.

MR. DEALER

The BENGAL FURNACE will make it warm for your competitor. We issue a Booklet that should be read by every Furnaceman.

Sent free on request.

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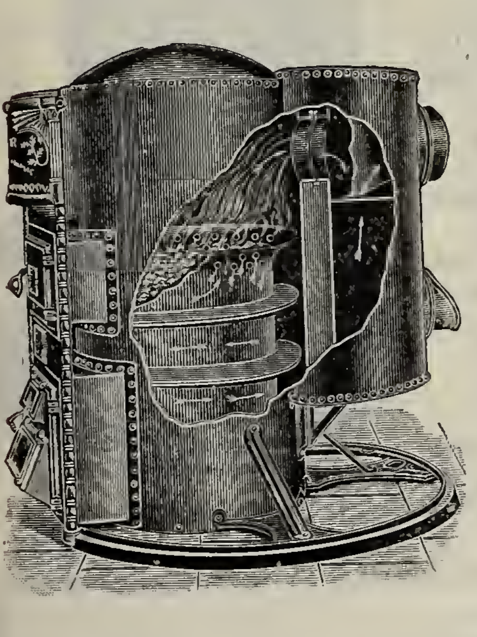
Washington, Hanover and Elm Streets, Boston, Mass.

FLOYD, WELLS & CO., Royersford, Pa.

NEW YORK OFFICE, 210 WATER ST., R. W. HILLMAN, Manager.



WEIR ALL STEEL GAS AND SOOT CONSUMING FURNACE.

THE HEAVIEST STEEL FURNACE MADE.

Absolutely gas and dust tight. A great heat-producer but a fuel saver.

MANUFACTURED BY
THE MEYER FURNACE CO.,
1300-1304 S. Washington St.,
SEND FOR CATALOGUE. PEORIA, ILLS.

"The Handy Furnace Pipe."

MADE WITH A VIEW OF BEING SAFE.

The saving of labor in putting it up really makes it the cheapest hot air pipe on the market.

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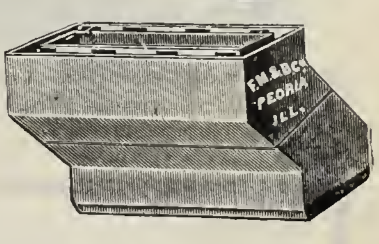

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Bought from us entitle the purchaser to a 1000 Mile Book FREE on any railroad.

*HAVE YOU RECEIVED ONE OF THEM?
WRITE FOR PARTICULARS.*

CHAS. C. HEATH & CO., - -

HEADQUARTERS FOR

WICK **RINGS**

For all Blue Flame Oil Stoves made—at startling low prices.

ELECTRIC BLUE FLAME COOKS

Are what you want for Summer trade.

Philadelphia and Baltimore.

IF YOU ARE NOT SELLING THE

Peck-Williamson Underfeed Furnace

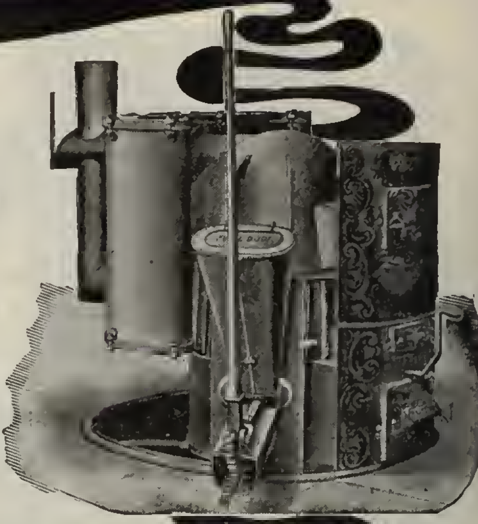
you have not the trade and are not making the money you might. Just a pull or two of the lever feeds the new coal from underneath.

The Underfeed Furnace consumes less fuel than any other furnace ever built. The coal is burnt more slowly. All the heat units from it, as well as from the smoke, are utilized and all smoke eliminated.

Our handsome booklet explains its splendid heating qualities and coal saving.

You may have this booklet and our special plans for selling. Ask for booklet about our Laundry Dryer also.

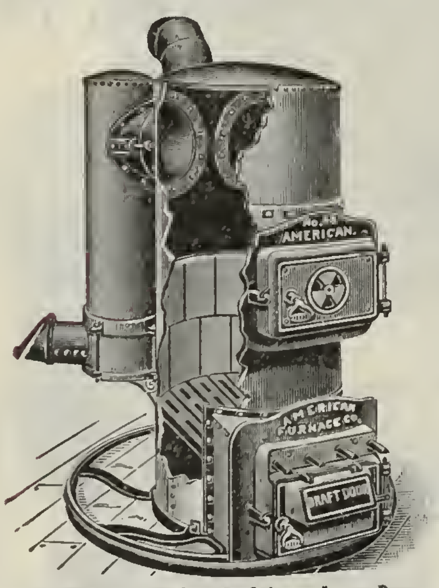
THE PECK-WILLIAMSON COMPANY,
CINCINNATI, OHIO.



Your Guarantee is Good,

If backed up by our line. We make many kinds and sizes of steam and hot water boilers, and you as a dealer ought to know all about this line. Let us send you our printed matter and post you on the standard line. Write to-day.

KEWANEE BOILER COMPANY
KEWANEE, ILLS.



Burn Hard or Soft Coal, or Coke. Large Doors.

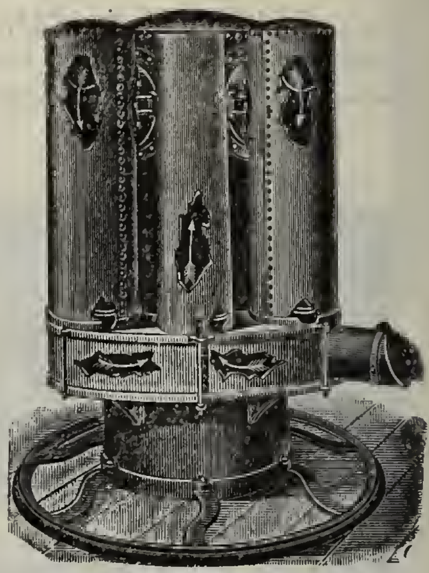
About Fire Pots.

We formerly lined our fire pots with cast iron—then they cracked and warped. Now we use fire brick for lining and will guarantee it for five years. The lining is replaced through the fire door.

The **AMERICAN FURNACE** is made strong in places where other furnaces have proven weak; it is made of heavy steel and riveted tight like a boiler. Will burn any kind of fuel.

You can only build up a permanent furnace business by handling a first-class furnace. We manufacture for the better class of trade.

The American Furnace Co.,
1911-13 PINE STREET, · ST. LOUIS, MO.



Large Radiators, easy to clean out.

Write for prices and secure the agency before the other fellow gets it.

The "HOME WINTHROP" range has a **dust flue** which takes **all** the dust up chimney even if the draft slide is open when you shake the grate.

The "HOME WINTHROP" heats **ALL of FIVE SIDES OF THE OVEN.**

Do you sell a range that is better than others, and if so, how does it differ from them except in ornamentation and name on Oven Door?

DIGHTON FURNACE CO., Taunton, Mass.

The New WALKER BOILER for Steam: for Water

This shows sectional view of our **15 Series Walker Boiler.** It is made for both Steam and Water Heating, and we have it in five sizes, with capacities from 400 square feet to 900 square feet for Water and from 240 square feet to 540 square feet for Steam.

This Boiler is simple, strong and serviceable; has a deep fire box; carries fire 12 hours without attention. Just the Boiler for the "Homes of the People."

"Honest Ratings." **WRITE FOR CATALOGUE No. 31.—Just Out.**

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Finest Factory in this Line in the World.

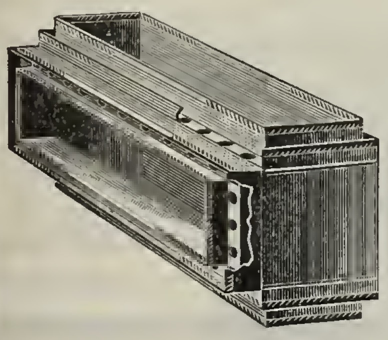
FURNACES **EXCELSIOR HEATING SPECIALTIES** **PIPE**

WE ARE MAKING

Very Low Prices

on our full line for present and future deliveries and solicit

Your Inquiries



THE EXCELSIOR PARLOR ELBOW.

Our Stove Pipe and Elbows, also Furnace Pipe are the Best made.

ELBOWS **EXCELSIOR STEEL FURNACE CO.** **REGISTERS**

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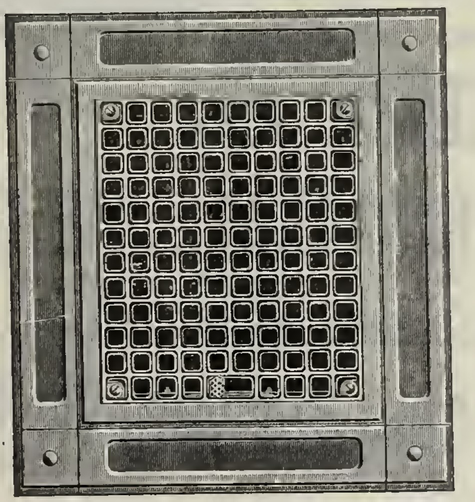
H. & C. WROUGHT STEEL REGISTERS



FURNISHED WITH WROUGHT STEEL or WROUGHT BRASS FACE PLATES, AND IN ALL FINISHES.

STRONG; LIGHT, HANDSOME in SIMPLICITY of DESIGN.

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REFRIGERATORS,
BLUE FLAME OIL STOVES,
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LARGEST JOBBERS
in
NEW ENGLAND.

GAS RANGES,
FURNACES, STOVES,
RANGES AND REPAIRS.

HENRY N. CLARK CO., 56 and 58 UNION ST., **Boston, Mass.**

WINCHESTER

Some steamfitters (a few) are born wealthy, some achieve wealth ; none have wealth thrust upon them. We notice those in the second category are firm friends of the "WINCHESTER" Steam or Water Heaters. Does this indicate anything to you? Smith & Thayer Company, Boston, Mass.; 106 Beekman St., New York.

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SOMETHING NEW.... Sheet Steel Draft Registers with Screws Complete.

PATENTED DEC. 17, 1901.

Threads are cut and disk is securely fastened *Without cotter pins or washers,* Yet it is loose or tight as wanted.

SEND FOR PRICES.

STOCK SIZES.

2½ in.	4 in.
3 in.	4⅛ in.
3¼ in.	4½ in.
3½ in.	5¼ in.
3¾ in.	

Any size made to order in quantities.

Manufactured by The H. A. MATTHEWS MFG. CO., Seymour, Conn., U. S. A.

We can't tell you all about it in this space—but if you want to sell the furnace that is winning popularity faster than any other in New England—just drop us a line asking about the

HOUSEHOLD FURNACE.

WHITE, WARNER CO., - TAUNTON, MASS.

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OVEN THERMOMETER

Just What You Have Been Looking For.

A Reliable Thermometer at a Reasonable Price.

Manufactured By

Evans Stamping & Plating Company,

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Patented March 11, 1902.

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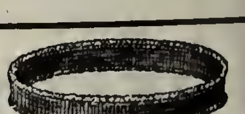
WESTERN AGENT.

STARTING RINGS For All Kinds of BLUE FLAME STOVES.

Small size, 40c. per doz. Medium size, 55c. per doz.
Large size, 75c. per doz.

In ordering mention diameter of rings and name of stove.

THE S. M. HOWES CO., 40, 42, 44, 46 Union Street, Boston, Mass.



STAMFORD FOUNDRY COMPANY

MAKERS OF

RANGES COOKING AND HEATING STOVES
HOT-AIR AND COMBINATION AIR AND
WATER FURNACES
LAUNDRY STOVES CONFECTIONERS' STOVES
CABOOSE RANGES ETC ETC

STAMFORD CONN

BOSTON GAS COOKER.

Low Priced, But Not Cheap.

OVEN 12 x 17 x 12 INSIDE.

One Extra Large Top Burner. Flush Top, A Perfect Baker.

RETAILS FOR $6

and gives the dealer an extra large profit.

SEND FOR PRICE.

MANUFACTURED BY

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HOT WATER AND HOT AIR

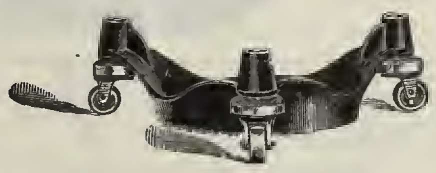
HEATING BY COMBINATION STOVES AND FURNACES.

Suitable for Large or Small Houses, Stores, Conservatories, Barber Shops, Hotels, etc., etc.

Heat Water Quickly.
Circulation is Positive.
No Joints Inside to Leak.

THE NATIONAL PIPE BENDING CO
160 RIVER ST., NEW HAVEN, CONN.

Independent Stove Casters



Better than a truck, as they fit any size of stove without adjustment. Made with roller bearing or plain casters. A postal brings prices.

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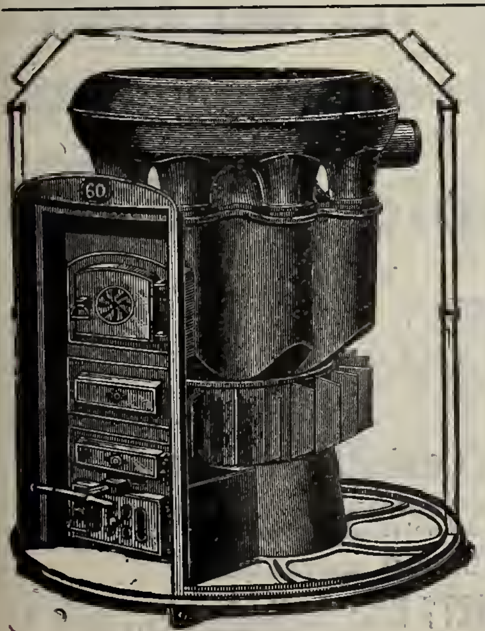


Imitation is Flattery.

Cory's All Cast FURNACES

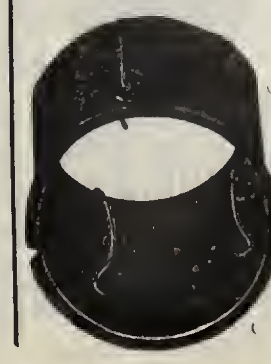
HAVE BEEN COPIED BUT NEVER EXCELLED.

An Absolutely Gas Tight Furnace Without Bolted Joints.

UZAL CORY & CO.
210 WATER ST., NEW YORK.

Established 1847.

THE S. & S. PATENT
Stove Pipe Thimble



Locks the Pipe from Pulling Out, and from Pushing In and Closing the Draught. Will last a lifetime. Nothing to wear out, and costs but a trifle. *Send for sample* and prices.

City Forge and Iron Works,
DAYTON, OHIO.

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BOILERS and RADIATORS

for Steam and Water Heating.

Pierce Touraine Steam Boiler.

LARGE HEATING CAPACITY.
ECONOMIC IN FUEL CONSUMPTION.

Endorsed by the foremost Architects and Heating Engineers.

Write for New Illustrated Catalogue.

Pierce, Butler & Pierce Mfg. Co.,
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The Champion Hot Water Combination Heaters.

They Fit Any Furnace.

Base section when used without ring sections.

Ring Section.

These Heaters are made in five sizes diameter, and from 100 to 700 square feet radiation capacity.

Will heat those cold rooms or an addition to the building. Will increase the capacity of any furnace. Are cheaper than coils and will do more work.

Write for new circular. Manufactured by

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STANDS FOR

American Blower Co Volume Blowers

There's nothing more satisfactory in longevity and efficiency; nothing which so completely answers its intended purpose.

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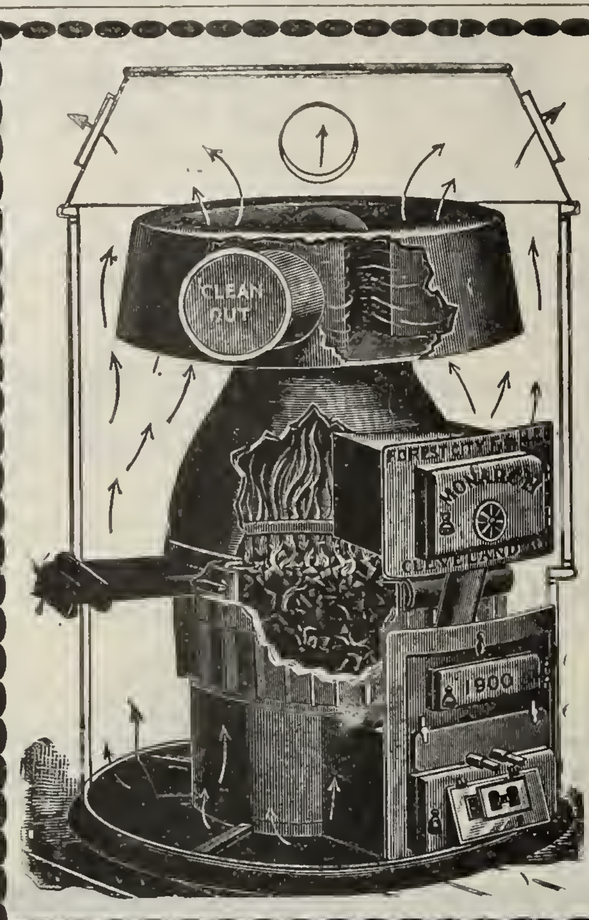

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All Cast Iron.
For Hard and Soft Coal.

Send for 1902 Catalog and discounts.

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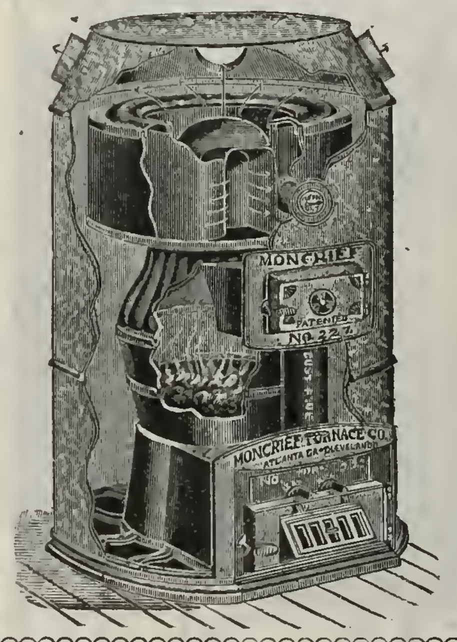
Gray Iron Castings to order. High grade only.



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PORTABLE
and BRICK SET.

Unequalled in the Great Essentials---Simplicity, Durability, Economy, Capacity, Comfort.

NO BETTER MADE.

Write for catalogue. Special price to the trade.

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The MONCRIEF FURNACE & FOUNDRY COMPANY, ATLANTA, GA.

20th Century Gas Stoves

THE BEST GAS STOVE MADE.

Best Materials and Workmanship Prices Low. Mail Orders Promptly Filled.

STOVE REPAIRS IN STOCK
FOR 2,000 STOVES AND RANGES.

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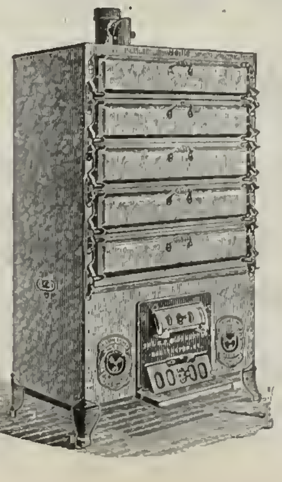

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OVENS FOR Bakers, Confectioners, Hotels, Etc.

Made in all sizes, single and double, for coal, wood, natural or artificial gas.

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"PLEASANT HOME" STEEL RANGES

Our Line Meets Favor
Because they are

**BUILT RIGHT
LOOK RIGHT
COOK RIGHT**

Dealers will find it to their advantage to look into our claims.

Western Stove Works

Peoria, Illinois

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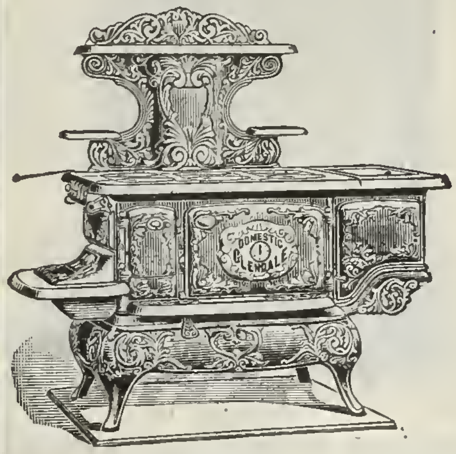
Stoves and Ranges



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SOMERSET STOVE FOUNDRY CO.,
SOMERSET, MASS.

Send for a Sample.

I Will Give the Public the Benefit.

Having completed patterns for my 1902 line, I will close out my last year's pattern of the celebrated

400 LB. WILLARD STEEL RANGE for $15.00.

This is Less than 4c. per pound.

They have six 8 inch lids. Oven, 17 x 21 x 12. Top Cooking Surface, 30 x 36. Large Warming Closet. 15 gallon Reservoir. Duplex Grate, Burns Wood or Coal. Lined throughout with Asbestos.

EVERY ONE GUARANTEED. BUY NOW AND SAVE 100%.
Write for Free Descriptive Circular and Testimonials.
"FIRST COME—FIRST SERVED."

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619-621 N. 4th St., - - St. Louis, Mo.

THE STEAM AND HOT WATER FITTERS' TEXT BOOK.

By Thos. E. McNeill

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TELLS HOW

- To Estimate Radiation.
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And Many Other Important Things that Good Workmen Must Know.

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ONE DOLLAR, POSTPAID.

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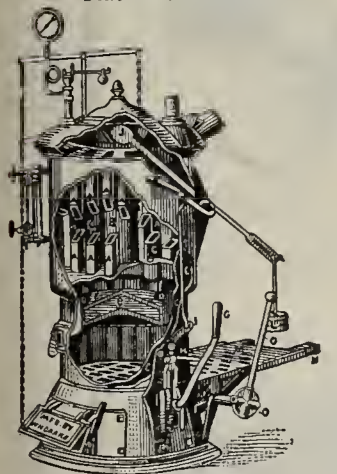
Sectional View of the
—TORRID—
Fine Coal Burner



For Steam or Hot Water Heating.

This boiler is made on an entirely new principle and is

The Only Boiler

that will burn Pea or Buckwheat Coal successfully.

SAVES TIME, SAVES MONEY.
RESULTS UNEQUALED.

Send for Descriptive Cuts.

MANUFACTURED BY

W. H. DRAKE, 36 Clinton St., NEWARK, N.J.
Factory: Hackettstown, N. J.

SOFT COAL IS CHEAP FUEL

especially if properly burned
in the right kind of a furnace.

CANTON PERFECT BLAST FURNACES

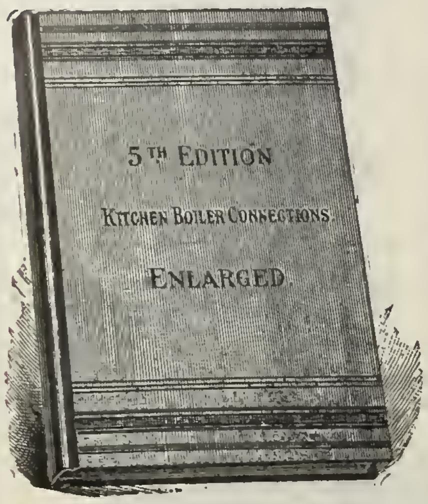
Were BORN and BROUGHT UP in a SOFT COAL DISTRICT.
Write for facts and prices.

THE BONNOT COMPANY, - Canton, O.

SCRANTON CORUNDUM & EMERY WHEEL CO.
1311-1315 Capouse Avenue, SCRANTON, PA.
Write for Catalogue.

OUR "BLACK DIAMOND"
(artificial abrasive wheels are especially adapted for
The Stove Trade
THEY ARE THE BEST.

KITCHEN BOILER CONNECTIONS.



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Practical Letters and Articles Relating to Water Backs and Range Boilers.

FIFTH ENLARGED EDITION.

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The Metal Worker produces in this volume a number of queries, with answers thereto, which have appeared in that paper. It will be seen that *any plumber who is troubled to make boilers work satisfactorily will here find his troubles alleviated. It contains numerous illustrations and throughout is highly practical from the standpoint of the plumber.* It contains a table of contents and an index.—*Scientific American.*

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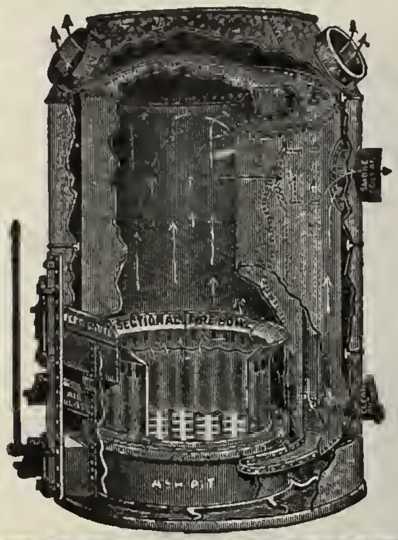
Specially Prepared for the
Stove Trade.

OHIO MICA CO., CANTON, OHIO.

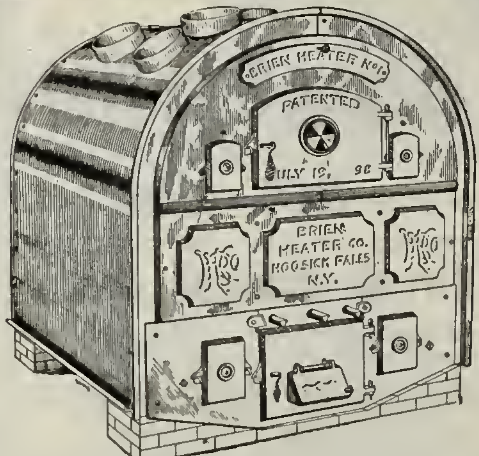
The Torrid Zone Furnace



is a trade winner because it has points of merit peculiar to itself that can be found in no other steel furnace. Our new catalogue is now ready to mail and a description of our Hot Air and Hot Water Combination Furnace can be seen in it. We furnish either the cast iron lining or the fire brick at the same price. Our Wood Furnace is called a powerful heater by those who use it.

CATALOGUE FREE.

Lennox Manufacturing Company,
Eighth Ave. and Frederick St.,
MARSHALLTOWN, IOWA.


BRIEN HEATER No.
PATENTED
JULY 19, 98
BRIEN HEATER CO. HOOSICK FALLS N.Y.

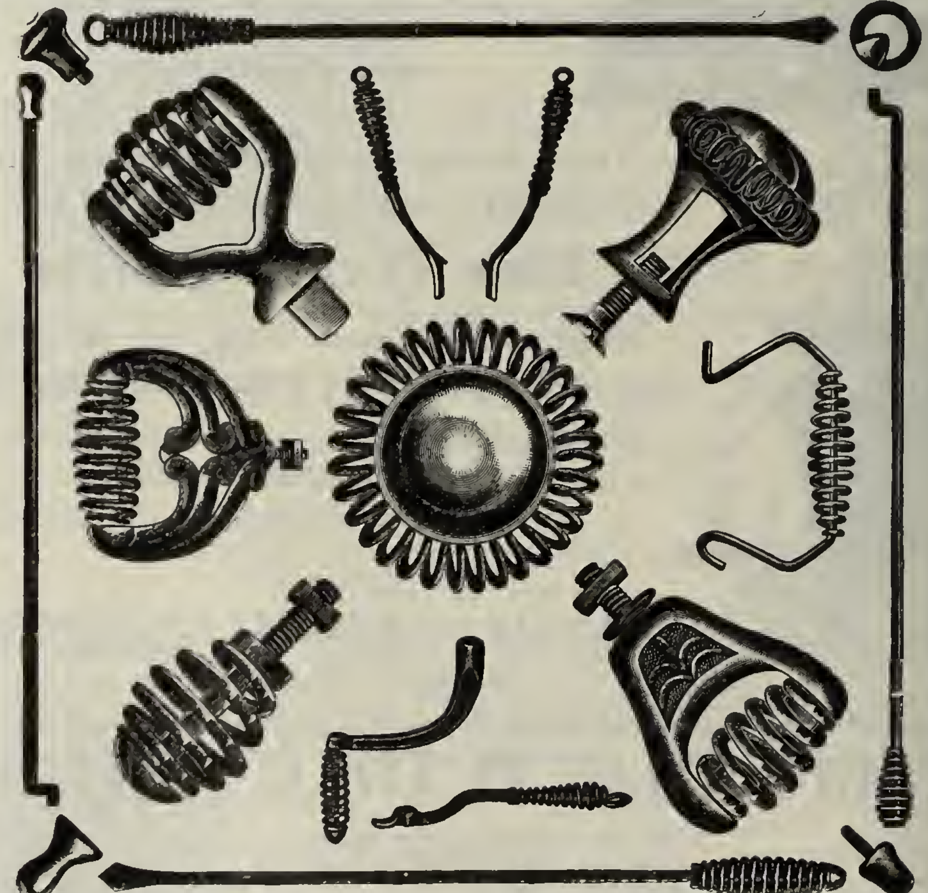
Brien Heater.

A perfect, all cast WOOD or COAL burner. There is no other Hot Air Furnace as low down as the "BRIEN."

Write for territory, catalog and prices.

BRIEN HEATER CO.,
HOOSICK FALLS, N. Y.

ARCTIC STOVE TRIMMINGS.



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MICA

EUGENE MUNSELL & C
MINERS & IMPORTER
NEW YORK CHICA
218 WATER ST. 117 & 119 LA

The YANKEE Hot Air DAMPER (IMPROVED.)

HOT AIR.

THE YANKEE EXCELS.

Above All—Cheapness—a dealer cannot possibly make dampers as cheaply as we sell the Yankee. Easily put in and taken out of pipes. Stiffest, quickest-working and neatest damper on the market.

It is impossible for this rod when in position to move either way

ROD POINTS: Has wood enameled handle. Wood handle cannot come off. Washer and spring cannot fall off the rod. Same size of holes are punched on each side of pipe. Rod is made of ¼ in. cold-rolled steel and slips into damper very smoothly. **Sample sent to any Dealer without charge.**

SMOKE PIPE.

SHEET METAL STAMPING TO ORDER.

The S. M. HOWES CO., Manufacturers, 40-46 UNION ST., **Boston, Mass.**

PLACE YOUR CONTRACT NOW

For PLUMBERS' GOODS. **SCREWS** For STOVE TRIMMINGS.

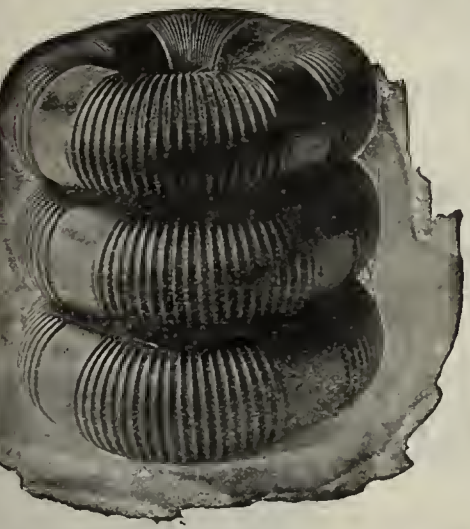
FOR HARDWARE SPECIALTIES.

Manufactured by

HARVEY HUBBELL,
BRIDGEPORT, CONN.

Perfect Elbows

PATENTED.



There is no bundle of elbows so strong as a bundle of "Perfect" Elbows. This strength insures safety in transit. When you figure how easily cheap elbows get damaged they are not so cheap after all.

If you want the reputation of giving your customers the **best** for their money buy the "Perfect."

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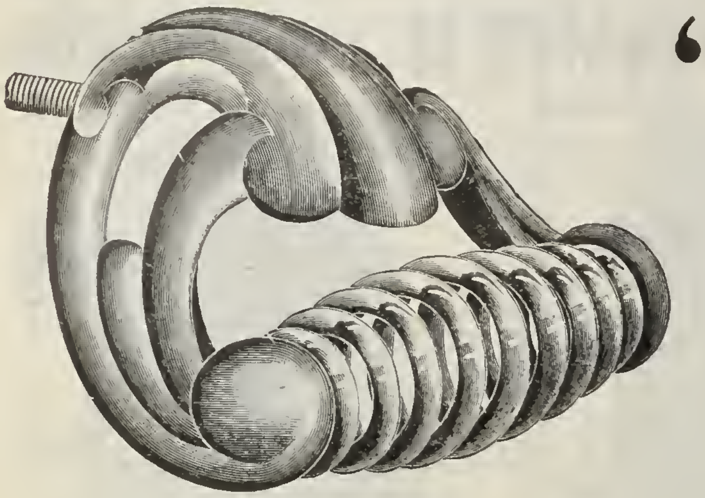

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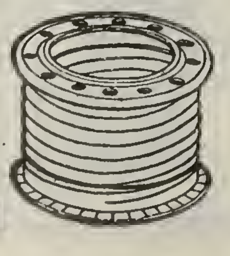

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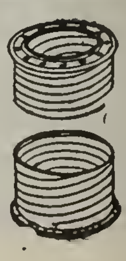

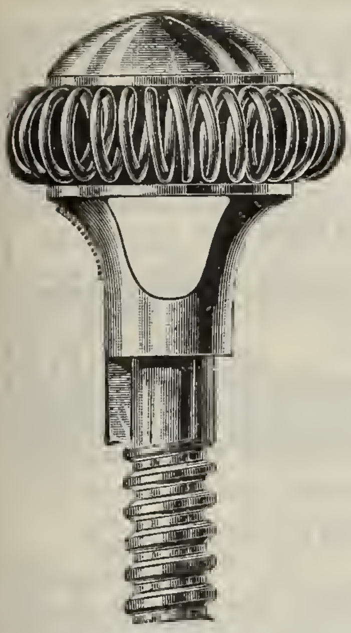

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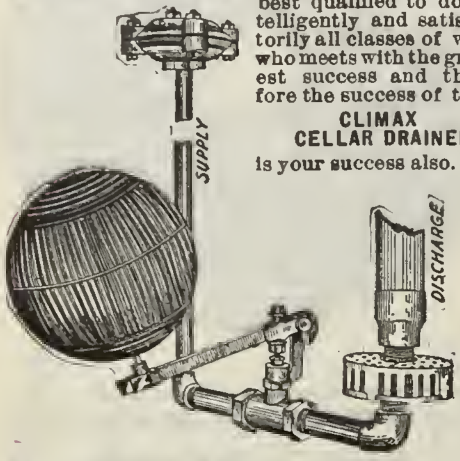

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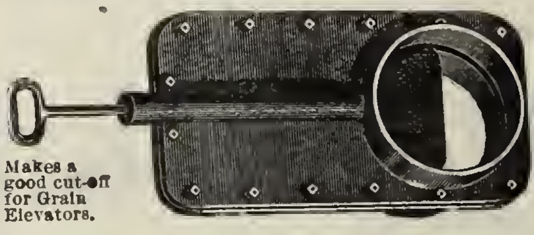

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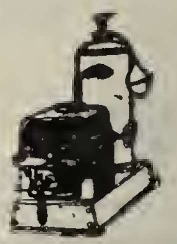

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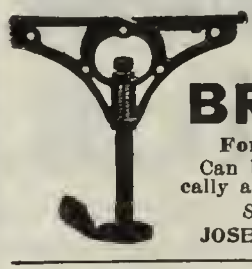

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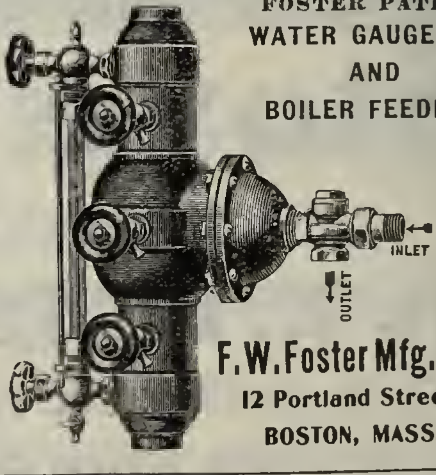

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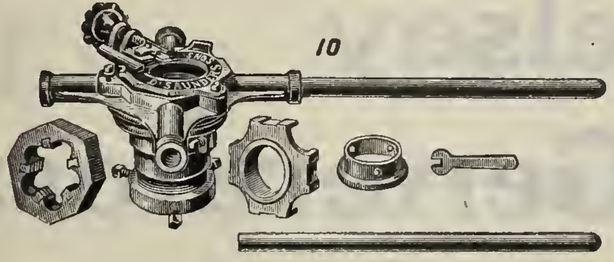

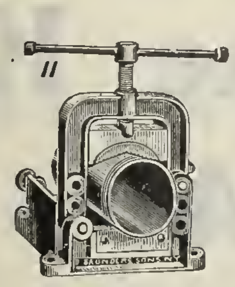

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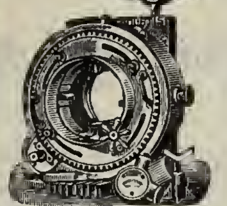

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Cut off and thread a 12-inch pipe.
Smaller sizes proportionatelv easy.

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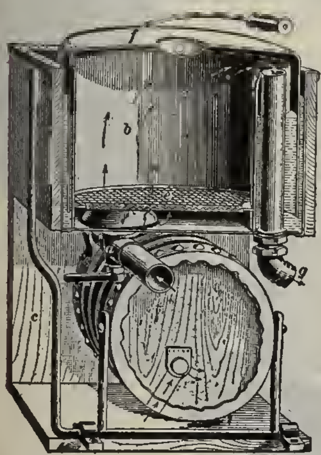

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NEW YORK BALTIMORE
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THE METAL WORKER.

NEW YORK AND CHICAGO.

New York, May 31, 1902.

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ST. LOUIS	1205 Chemical Building
CLEVELAND	312 The Cuyahoga
LONDON	Hastings House, Norfolk St., Strand

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The Anthracite Coal Strike.

While the strike of the anthracite coal miners is operating to the advantage of the producers of coke and bituminous coal in stimulating the demand for those fuels among consumers who have depended hitherto upon anthracite coal, the benefit derived by the soft coal and coke interests is more than balanced by the unfavorable effects of the strike, which embrace the idleness in the first place of over 140,000 men directly engaged in mining anthracite coal, to whom in ordinary course over $1,000,000 in wages would be paid every week. The loss of this purchasing capacity is no small matter to the country, even though it be confined to a single State. But the strike is not restricted in its wage reducing effects to those directly employed in mining. Thousands of men depend for their employment on the steadiness with which the anthracite mines turn out their product. They cover those who furnish supplies of all kinds to the anthracite mining sections, but more especially those connected with transportation interests. Other thousands have been thrown idle by the cessation of general business in mining towns. The number of unemployed will probably be increased very considerably as Eastern manufacturing establishments are thrown into idleness because of the lack of the necessary fuel.

The disadvantages and losses to general business are so great that it will be to the interest of the country if the strike should be settled as speedily as possible. Notwithstanding the optimism of those who prophesied an early termination, it appears to be running along with no indication of collapse. The miners are apparently determined to make a test of endurance, and the managers of the mining companies are equally resolute. It is fortunate that sympathetic strikes are not easily inaugurated, for if they were, the miners in the soft coal districts would be expected to assist their colleagues in the anthracite region and by the declaration of a general coal strike cause serious distress throughout the country. Labor leaders have shown a disposition in late years to widen the area of strikes, but thus far they have not succeeded in carrying through a movement of this character of any great magnitude. While the anthracite mining companies absolutely refuse to permit outside interests to exert any influence in settling this strike, it is earnestly to be hoped that some way may be speedily found for bringing the struggle to a termination. All business men will certainly breathe much more freely when this menace to prosperity has been removed.

Scarcity of Skilled Labor in Tin Plate and Sheet Mills.

From several quarters come reports of a growing scarcity of skilled labor among the sheet and tin plate plants of the country. With the starting up of so many new independent enterprises in this field, it seems that the available supply of men who are qualified to assume the more responsible positions in the mills is becoming exhausted. It is understood that some of the new plants have been seriously crippled through inability to obtain a sufficient supply of this class of labor. No doubt there are a large number of young men growing up in the mills who are learning the business and who eventually will become skilled sheet and tin plate mill men. But it takes a man, as a rule, several years to acquire the necessary skill and judgment to enable him to fill the more responsible positions in the mills where experience and delicate work are required. The present position of the American tin plate and sheet manufacturing industries in respect of skilled labor is an illuminating illustration of the benefits accruing to this country by the establishment of these industries. They are providing work for many thousands of young Americans and paying out millions of dollars a year in wages, which would not have been the case, at least in regard to the tin plate industry, if it had not been established through the enactment of the McKinley tariff law. This law met with great opposition on the part of many well meaning but ill-judging people, who feared that the establishment of a protected domestic industry would mean an enormous increase in the price of tin plates to the general public. As is well known, this fear has been proved groundless, while the industry in question, as before stated, has been the means of introducing a lucrative branch of work into the United States, whereby thousands of men with their families are enabled to earn a comfortable living.

Building Activity in the South.

Probably no part of this country has shared to a larger degree in the prevailing prosperity of the past two years than the South. Strong evidence of the general business activity in that section of the country is presented in the reports of building operations that come from that part of the country. Building is said to be going on on a more liberal scale than ever before in most of the Southern cities. The citizens of Jacksonville, Fla., are spending millions of dollars in buildings to replace those destroyed by the great fire which visited that thriving city a year ago. In Atlanta, Ga., and Birmingham, Ala., the building business is described as particularly brisk. A noticeable feature of the new construction in those cities is the number of large structures for business and public purposes, as well as handsome residences, that are being erected, many of which are of modern fire proof construction type. In several of the prominent Southern business centers the demand for houses exceeds the supply. This is said to be particularly the case in the two cities last named, as well as in Knoxville, Tenn., and in Richmond and Norfolk, Va. Roanoke, Danville and several other cities in the Old Dominion State are also sharing in the prevailing building activity. In connection with the present prosperous condition at the South, it is not strange to learn that there is an urgent and growing demand in that section for property qualified young mechanics, as well as for professional and business men of all kinds. The supply of adequate skilled labor is one of the great problems of the South to-day, and a strong movement is on foot to meet the growing requirements in this direction, by the establishment of technical and trade schools throughout the Southern States. This subject is now occupying the attention of business men and others in the South to a greater degree than in any other part of the country.

Is a Man of Forty-five a "Back Number"?

In a report to his Government on the subject of American business methods, the British Consul at Chicago dwells upon the difficulty of a man over forty-five years of age in finding work in that city. This, he considers a great fault, and it is the only blemish he seems to have discovered in what he evidently considers an otherwise admirable business system. "There are many men in good positions over that age," he says, "who will, in all probability, retain them for some years and then retire; but a newcomer of that age has little chance of employment, as he cannot expect to learn new ways. A man who is out of work at the age mentioned is regarded with suspicion, especially when trade is good, because, if he proved that he was worthy of his position—which should be a good one after many years of service—he would not have been forced out; or, if he had, some other firm who had come into contact with him in business would try to secure his services." This will be taken as a fairly correct statement of facts. Nowadays a man of middle age who has no marked specialty of knowledge or skill in some department, and who, from whatever cause, finds himself out of employment, usually has a hard time to secure work that will yield him anything like a comfortable living. This is essentially an age of young men, and it is becoming increasingly difficult for the older men to secure positions in any profession, trade or business. Complaints of an arbitrary "dead line" are heard in many fields of work in this country. The man who has passed forty-five or fifty mile stones on the road of life, and who should be in the plenitude of his mental and physical powers with a fund of valuable experience at his back, not seldom finds himself shouldered aside by younger men. Whether this is simply a passing phase, or a policy that is destined to endure, is hard to say; but the fact remains that to-day age and ripe experience are often put aside in favor of youth and inexperience. This tendency is one of the features of modern business life in America, and it is a fact that must be taken into consideration as bearing upon the commercial and industrial future of the country.

Active Demand for Sheet Metal Workers.

A good idea of the activity, or otherwise, of the various trades in which our readers are interested can usually be gained from a scrutiny of the Labor Exchange department of this paper. The applications for help and for employment contained therein form a pretty correct barometer of the condition of these trades. For some weeks past it will have been noticed that the "Help Wanted" advertisements have materially exceeded those under the heading of "Situations Wanted," suggesting that the demand for skilled workmen is greater than the supply. It is interesting, in this connection, to note the character of the advertisements under these heads, as reflecting the relative degree of activity in the different trades. At the present time the demand runs heaviest for tinsmiths, roofers and sheet metal workers generally, about two-thirds of the "Help Wanted" advertisements for some weeks past having been for this class of labor. While such a condition is not unusual at this season, the call for sheet metal workers is more than ordinarily pronounced this year, indicating a scarcity of the supply of skilled workmen in this line. Moreover, the applications come from all parts of the country—North, South, East and West being alike represented, showing that the activity of employment in this branch of industry is not confined to any particular section, but is general. This assumption is substantiated by the reports published in the various trade and commercial organs. Not only is the demand for capable sheet metal workers usually active in this country, but at times of special business prosperity it invariably exceeds the supply. This is the case just now. Moreover, it seems that there is a growing lack of properly trained and skilled men in this trade. It would be safe to assume that this is due, in a measure, to the absence of facilities for practical and scientific instruction in sheet metal working, such as are afforded in some other countries. With the exception of the New York Trade School, there is not, so far as we know, another institution in the whole country that is giving a thorough and systematic education in the line of sheet metal working. It is a branch of industry which is constantly expanding. Sheet metal is constantly being put to new uses, and the working of it is becoming a more scientific trade, and the time has arrived when better facilities should be provided for the young men of this country to secure acquaintance with the scientific and technical principles as well as the handicraft connected with this important branch of trade.

Light and Air for Sale.

It has come to pass that the modern skyscraper is giving to natural light and air a value not hitherto associated with real estate assets, says the *Age of Steel*. It is obvious that with abnormally lofty structures grouped in certain districts, that some or others in the family of architectural giants are more or less excluded from such light and air as their boxed up denizens require. Where this is the more painfully realized, it is but a matter of time when the rental value of such offices will decline. This final issue is beginning to arouse the interest of real estate men. As defining the situation, some two or three examples have come to light in New York. In one instance it was proposed to erect a Jacob's ladder building next to one of the modern skyscrapers. This, if carried out, would close the shutters from necessary light, and restrict ventilation or the incoming of fresh air. The owners of the woulb-be darkened structure have been approached with a proposition that the modest sum of $245,000 would secure the light and air privileges of the present open or unobstructive space. This commercial use of natural light and air is not likely to be neglected. If these can be put on the market the men willing to make the best of it are alert and alive, and will be ready to reap where they have not sown, and to gather where they have not strewed. To meet these inevitable conditions a New York contemporary says: "When it becomes necessary to pay out $250,000 simply for light with which to preserve the earning capacity of a piece of property, it is plain that we are approaching conditions that must compel a readjustment of real estate values and methods of construction, if not the laws."

Can Consolidation Succeed?

A prominent stove manufacturer has sent us his views regarding the proposed consolidation of stove manufacturers, asking and answering the above question. What he says will undoubtedly be read with much interest by the stove trade. We may add that he occupies an independent position, not having been identified in any way with the consolidation movement, and enjoys the reputation of having built up a most successful business. He says:

While the subject of consolidation is uppermost in the stove business and all minds are giving it some thought, and many are giving it special attention as well as thought, this very pertinent and all important question keeps bobbing up to each thinker. In the latest proposed consolidation of the stove industry we have the exceptionally rare "start off" by having it suggested and the business of consolidation pushed without a promoter, but by one of the largest producers of stoves, a man of high honor and integrity and one well liked wherever he goes, because he does not have to lie to do his business, but finds the honest truth has always served his ends and those of his house, one who is as straight as he is tall. Without the enormous "rake off" of the promoter and with the simple commission of the financier, the consolidation of the stove industry starts off on the most auspicious basis possible.

If the plan adopted becomes satisfactory and is accepted by the different manufacturers who sell out to the consolidation, and the consolidation is formed on this most unique and economical basis, why shouldn't it succeed? If the president and Board of Directors of the consolidation have the force of character and backbone to throttle in its infancy the game of grab and big salaries to the officers it will succeed. If the president and Board of Directors of the consolidation have force of character and backbone enough to stop their ears and close their eyes to the pleadings for favorites in favored positions at large salaries it will succeed. If the president and Board of Directors of the consolidation have force of character and backbone enough to be a guide unto themselves and steer clear of the rocks that have been disastrous to two combinations in our trade it will succeed.

It is the president and Board of Directors that are put in charge of the consolidation that will make it a success. If they are not of the right kind it will be just like a stove that is not built right, for it won't work right. If the president and Board of Directors will not practice economy in salaries and expenditures in every line, it will not succeed. Salaries that some individual firm may have been able to pay, the consolidation cannot pay as a start off. Why? Because they will have new conditions to meet, new ideas to contend with. They will not have the intense interest of the individual who sold out to help them overcome now what was not a very hard problem to overcome before.

These propositions will cost the administration money, and it should go into the vital, life-giving impulse of the business and not into high salaries, but pay a fair compensation to a competent man who can earn the same salary in any other line.

After one has sold out he means naturally to take things easy. He is not, or should not, be expected to work so hard as he did before, and he won't. Don't pay such a man a dollar he does not earn, if he don't earn a dollar. All the savings in consolidation can be easily wasted, as numerous examples are on record, if economy is not the first and constant watchword in the administration, and with it as the watchword the president and Board of Directors can ride easily and quickly to success. But the word economy must be spelt with all capital letters and the surplus will be greater in proportion than the other noted successful combinations.

Will outside competition hurt consolidation profits? Yes, some, but economical administration will overcome that ten fold, and the outside competition will be felt only for a short time, as the human nature in the stove dealer will soon recover from the shock of purchasing from the consolidation when he finds himself equally as well and perhaps better treated than he was before. He will soon find that he can buy his goods from the consolidation in quantities to suit and prices likewise, and upon a cut and dried form of purchase that he does not have to lay awake nights worrying whether his competitor has purchased another brand of goods for less. He knows he has not, he knows just where he stands, he does not need to worry or speculate.

Can consolidation succeed? It can, but it can only succeed on just the same basis that an individual can. It will succeed in the same way that hundreds of stove men have succeeded. It will do it with less effort and less wear and tear than the individual ever dreamed of, but the watchword must be E. C. O. N. O. M. Y.

The Eastern Stove Trade.

Though there exists some difference of opinion in the stove trade as to the business done so far this year, the majority of the reports contain little that might be considered complaint, and the general view is that it has been satisfactory. In the vicinity of New York the benefit of the old local association is being realized in the freedom with which the individual members of the former body confer as to the advisability of advancing prices. There has been no meeting of the local manufacturers, but the stiffness of prices in the stove market and the quite general advances made show that there is considerable unanimity in the independent advances that have been made in prices and that those now prevailing have not yet been raised to a point that conditions would justify. While there are those who are strongly of the opinion that the year so far has not been a good one among the stove trade, a recourse to order books would show that the output of many plants has been largely engaged. This feature, however, is one of the causes for complaint. It is asserted that Western manufacturers began in January to canvass for business previous to the advances in prices, which have since been made. This example was followed by manufacturers in other fields and some salesmen report that they have already booked orders amounting to as much as their entire sales for last year. Other houses have refused, in view of the indications of advances in iron and labor that have since been realized, to sell goods for delivery after July 1. Still, others have allowed their customers the privilege of placing a portion of their orders for the purpose of protecting themselves against the outcry which is expected when dealers will be compelled to pay the advanced prices which now amount to 10 per cent. over those of last year. The late buyers, with stores of a higher cost, will be forced to compete with those who placed their orders in January at old prices, or at an advance of not more than 5 per cent. The indications, however, are all favorable and the outlook as viewed generally is for a good fall trade. It is to be hoped that the volume of business will then be sufficient to keep all the manufacturers busy and to make things so lively for the dealers that the conditions which have been recounted by some of the best informed stove manufacturers will not have any serious effect.

Death of Henry Perkins.

On the 26th inst. Henry Perkins, who was for many years prominently connected with the stove industry in Ohio, died at the residence of his daughter in New York City. He was born in Akron, Ohio, in 1842, and was the son of General Simon Perkins. He served in the Civil War as assistant quartermaster, and on its conclusion entered the office of the Cleveland Rolling Mill Company. In 1870 he returned to his native city to become secretary of Taplin, Rice & Co. Subsequently he was elected president of the company, and continued to hold that position until his retirement three years since, which was caused by failing health. Mr.

Perkins was deeply interested in Masonry, enjoyed the rare distinction of the thirty-third degree, and in 1889-90 was Grand Commander of the Knights Templar of Ohio. He also served for several years as president of the Board of Trustees of the Masonic Home in Springfield. In 1868 he married Miss Emma White of Cleveland, who attained celebrity as one of the finest soprano singers in Ohio. The remains were taken to Akron for interment.

CIRCULATE THE AIR WITHOUT MOISTENING.

BY W. J. H.

I have been interested in the discussions of "rotation of air" in *The Metal Worker* of late, and have read each article carefully as it has come out. The writer has been advocating that system for several years. Here, in Marshalltown, Iowa, hot air furnaces are used nearly altogether in preference to any other system of heating. The "rotary system" is in universal use, and the people seem healthy and happy.

I have been watching for some things to be brought out in this discussion that no one has seemed to recognize or make any note of—namely: 1, That the fundamental principle in heating a room or a building with a hot air furnace is the circulation of air within that building or room; 2, that there are two distinct ways of securing that circulation, one of which is by the so-called "rotary system," and the other by a ventilating system; 3, that a cold air supply from the outside to the furnace is a part of a ventilating system and has no connection whatever with a "rotary system," as it cannot be used in connection with the "rotary system" without retarding the circulation of air within the building, and circulation, as stated above, is the fundamental principle of heating by a hot air furnace.

The cold air supply from the outside to the furnace can be used successfully in connection with a ventilating flue that has sufficient capacity to carry the air out of the building or rooms to be heated as it is supplied by the outside cold air duct through the furnace, and thus secure the circulation. In this system every room in a building should have a connection from the floor, or by face plate placed in the baseboard near the floor, to the ventilating flue. The ventilating flue, in order to be relied on, must be heated by the smoke pipe or a small furnace, as the case may be, according to the size, &c.

From the foregoing it will be seen that the cold air supply from the outside to the furnace has no connection whatever with the "rotary system," but is a part of a ventilating system (and only a part), and should be used only in connection with the ventilating flue. If either part of a ventilating system is used in connection with the "rotary system," it would be better to use the ventilating flue instead of the outside cold air supply, and especially is that true in this locality, Central Iowa. The "rotary system" is more practical in this cold country than the ventilating system. Further South, and in a warmer climate, the ventilating system would be more practical.

We use the "rotary system" altogether for residence heating. There are hundreds of them in use in this locality, one of which is in a large house owned by Charles Hull in Marshalltown, Iowa. It is heated by a Torrid Zone furnace with no extra water supply in connection. Mr. Hull has had the system in use for three winters. A good many plants are kept in all parts of the house which do fine and thrive, and there is no trouble with frost on the windows as in some systems where too much water is used. I think a nominal supply of moisture, such as you get with nature, is best.

In a great many cases the purchaser is at fault for not having a good system of heating, as he sets the price that he is willing to pay, and in most cases can find some one that will slight the job enough and put the system in for him and guarantee it for his price. He only gets what he pays for, and would get that from the man that would put the job in right and charge more for it. It is a mistake to economize too much on the first cost of a furnace job, for, as a rule, it is poor economy in the end.

A Relic of Colonial Days.

Robert C. Bair has presented to the Historical Society of York County, Pa., an interesting specimen of the earliest iron stoves manufactured in York County. It is a part of one side of a wood stove made at Mary Ann Furnace in 1763. This furnace, says the *Bulletin* of the American Iron and Steel Association, was erected in Manheim township, about 4 miles south of Hanover, on the farm now owned by William Dusman. The relic above referred to was found by Mr. Bair, in 1889, on the property of Dr. H. L. Smyser, of York, Pa. It was uncovered at a depth of 2½ feet below the surface. The plate when found was in two pieces and seemed to have been used as the bottom of a hearth. Upon being carefully scrubbed the fact was revealed that it was part of a side plate of a stove of primitive manufacture. It is nearly an inch thick, and is full of air holes on the back of the cast.

The words "Mary Ann Furnace" came out in bold relief when the clay was removed and also the date "1763," the year of its manufacture. Because this year is thus indicated Mr. Bair concludes that the Hon. George Ross, proprietor of Mary Ann Furnace in 1762, felt great pride in the product of that first year of his industrial enterprise as a pioneer ironmaster and stove founder. It can safely be said, in consideration of other historical circumstances, that if it was not itself the first, it was at least among the first iron stoves made west of the Susquehanna River. George Ross, the manufacturer of the stove of which this relic is a part, was one of the signers of the Declaration of Independence.

The Brecher-Buck Company.

Announcement was recently made of the fact that the well-known manufacturing concern of Fischer-Leaf Company of Louisville, Ky., have retired from the retail business, which they have turned over to the Brecher-Buck Company, composed of the following former members of the first named concern: Charles P. Brecher, formerly vice-president; G. M. Buck, formerly manager, and W. C. McGruder, formerly city salesman. Mr. Brecher is president of the new company; Mr. Buck, vice-president, and Mr. McGruder, secretary and treasurer. We understand that the new concern will continue the retail business at the old stand, 433 to 435 West Jefferson street, but will conduct it upon a much larger scale than heretofore. The store has been remodeled throughout and equipped with electric elevator and other modern appliances. On the first floor are the stove, range and refrigerator departments, while the second floor is devoted to a display of fine mantels and tiling, the latter including foreign and domestic art tiling for floors, wainscoting, &c. The statement is made that the Fischer-Leaf Company will confine their business in the future to that of manufacturing for the trade.

The Magee Star Gas Range.

The Magee Furnace Company, 32 to 38 Union street, and 19 to 27 Friend street, Boston, Mass., have just brought out a handsome gas range, which they are offering in two sizes under the name of Magee Star. It is described as being of new design and as embodying novel features in gas range construction. The drop doors are well balanced; the oven burners are removable, and can be taken out without removing a screw or bolt, while the top burners lift out, thus leaving the top of the stove open and clear of obstruction for cleaning. The oven is square, and in the respective sizes measures 16 and 18 inches. The needle valves are referred to as being of new style, and the range is also fitted with new style wood handle lever cocks.

The company issue a four-page folder calling attention to the Magee Grand, which is a combination range for gas and coal. The gas attachment is such that it can be used in connection with any Magee Grand range, and can be operated independently, or in connection with a coal range, as preferred. It has two Star burners on the main top and two double row burners under the oven.

The oven is asbestos lined throughout, and the broiler is so constructed that both baking oven and broiler can be used at the same time and with the same fire.

We understand that for something like a year past the company have been getting into line for the manufacture of gas cooking appliances, and now have ready a full assortment of first-class goods. At the present time their large line is being built under expert management, and the goods embody features which cannot fail to be appreciated by an intelligent trade. The line includes all sizes and styles of chop broilers, vertical broilers, combination water heaters, independent water heaters, gas attachments for coal ranges, with and without water heaters, &c.

AN OLD COMBINATION HEATER AND VENTILATOR.

Those in the furnace trade who are interested in following the evolution of the original hot air furnace and the best practices of the furnace trade will be interested in the following record of some of the happenings of the past in this field, through the courtesy of W. R. Macdonald, who says:

"Without comment upon the merits or demerits of the antique combination heater shown in *The Metal Worker* of May 3, except to remark that, with a single heat source, it performs in private houses the same duty as is performed in some school houses where a special furnace is used to heat the main upcast flue, while the other warm heaters supply the fresh warm air, the following record is cited to prove the antiquity of the *quasi* 'rotary' system:

"A model of the combined heater and ventilator was placed on exhibition in New York City in 1881 at the American Institute, and the judges, mistaking it for an entirely different system, reported: 'The invention has no special merit. The practice of taking the air from rooms and reheating it and returning it to the rooms is old and has been done for years, and it is not thought desirable.'

"Alfred Beach of the *Scientific American* said of that report: 'Such a report could emanate only from a conceited know-nothing juror.' An amended report was asked for, with the following result:

NEW YORK, June 28, 1882.

Charles Wager Hull, Esq.

DEAR SIR: I have given the matter of W. R. Macdonald's combined sanitary heater and ventilator a very searching investigation in every particular. I find it different from my first idea, and his application of heat in a furnace to foul air flues for the purpose of ventilation is new, as far as my knowledge extends. The application of heat to flues, for producing circulation and ventilation, is old, but I do not know of any furnace so constructed. My opinion is that the construction is an improvement, and the only furnace made that will successfully combine heating and ventilation, and as such should receive the usual award.

Yours truly,
SAMUEL S. UTTER.

I fully concur in the foregoing in regard to W. R. Macdonald's combined heater and ventilator.

JOHN S. BROOKS.

I certify foregoing to be a true copy of the amended report made by Samuel S. Utter and John S. Brooks, who acted as judges on exhibit of combined heater and ventilator.

CHARLES WAGER HULL,
General Superintendent.

July 19, 1882.

"The preceding history," says Mr. Macdonald, "is for the information of *The Metal Worker*, to be made use of or not as it may elect. The writer was in advance of the times. Some of the manufacturers are just that much behind the times. One who did his best to sidetrack the inventor, and really succeeded, is now retired high and dry on a mass of obsolete patterns, and is in an unenviable position.

"I further quote from page 24 of Circular of Information, No. 3, 1891, on 'Sanitary Conditions in School Houses,' issued by the Board of Education, Washington, D. C.:

"'In all methods of heating by hot air furnaces, or by indirect steam or hot water, as much care should be taken to secure the exhaust from the room as is taken to supply the room with fresh, warm air, and this is required for heating alone, as well as for the proper ventilation of the room.'

"'Also on page 9 of the same circular: And in private houses the case is generally even worse than in school houses and public halls. The safety in these houses lies in the fact that but few people generally are confined in one room.'

"The furnace which changes air must in time supplant in private houses steam and hot water installations which do not change air."

In the Matter of Cover Lifters.

Manufacturers of that important appurtenance of all kinds of cooking stoves and ranges and some heating stoves, the cover lifter, will be interested in the following from the Baltimore *American*, which appears to indicate a possible increase in the demand for this humble implement in a field that may create for it a new respect and lift it to the dignity of a weapon, when the woman behind the instrument becomes belligerent. A writer in the paper named was inspired to poesy by a contemplation of the subject. His effort is as follows:

ONE BLOW ONLY.

[Justice Marean of Brooklyn declared yesterday that, under the law, a woman might strike her husband once on the head with a stove lifter and not be adjudged guilty of treating him so cruelly as to warrant a decree of separation.—Newspaper Item.]

When the lady of your bosom
  Thinks that you have rudely miffed her,
She might smite you on the thinker
  With the ever ready lifter.
But be patient, oh, my brothers—
  When the blow comes, gamely meet it—
For you have this legal promise,
  That she will not dare repeat it.

If she seeks to swat you swiftly
  With a leg from off the table,
Or the rolling pin, or carver,
  Speak up softly, kindly: "Mabel,"
(Or whatever else her name is)
  "Know you not the legal sifters
Say that wives may hit their hubbies
  With no other things than lifters?"

If she seizes on a soup bone,
  Or a segment of bologny,
Raise a warning finger at her:
  Say: "You'll lose your alimony!"
Gentle badinage of this sort
  May from her intention shift her—
Anyway, let it be legal;
  Make her stick to the stove lifter.

ODD PLATES.

THE stockholders of the Pennington Foundry & Heater Company, Pennington, N. J., have voted to increase the capital stock from $50,000 to $80,000. The company are running their plant full and have lately largely increased the number of their employees, as well as the volume of their output.

AN exceptionally attractive advertising device is being distributed by the Mount Penn Stove Works, Reading, Pa., in the shape of an oval panel 13 x 9 inches, bearing the clover leaf trade-mark of the Penn Stoves, Ranges and Furnaces in green on a red background with a raised gilt border. The color printing is remarkably effective and the panel is provided with a cord at the top for hanging. It is made of polished sheet steel, the lettering being in gold and white and the whole effect harmonious and striking.

A STRIKE of the molders at the plant of the Richmond Stove Company, Norwich, Conn., which lasted a week, was settled a few days ago. The men withdrew their demand for a 20 per cent. advance in wages and went back to work on Thursday, when the foundry was reopened after repairs.

THE SCATES WARM AIR FURNACE COMPANY, Knoxville, Tenn., who began business in 1881 and came under the present management in 1898, are now not only manufacturing Furnaces, but also erecting them throughout the whole of the Southern States, handling much of their output in carload lots. They make a horizontal return flue steel brick set Furnace as their leader and also a high grade Cast Iron Furnace. A few days ago they shipped a carload of Steel Furnaces to Reickville,

N. C., and within a short time they will ship a carload of the same class to Selma, Ala.

Among the extensive line of trade literature which from time to time is issued by the Monarch Stove & Mfg. Company of Mansfield, Ohio, may be mentioned an eight-page folder illustrating and describing the Monarch Asbestos Lined Ovens, especially intended for use in connection with their extensive assortment of Stoves. The top, sides, back and door are lined with stamped and corrugated tin plate with ⅜-inch space between, filled with the company's patent air cell asbestos, which is claimed to retain the heat within and result in great economy in operation. The drop door forms a strong shelf when open and, although made in four styles and sizes, all the ovens are constructed on the same principle. The peculiar manner in which the ovens are manufactured enables the company to ship them "knocked down," resulting in a saving in freight as well as greatly reducing the liability to damage in transit.

In a little pamphlet which has been issued by the Eclipse Stove Company of Mansfield, Ohio, illustrations are presented of a most interesting line of Coal and Wood Cook Stoves and Ranges, which embody the latest features in the way of ornamentation and construction. Among the many features to which attention is invited are the square oven, oval shaped fire box, duplex grate, removable bottom oven plate, heavy covers and centers, corrugated linings, &c. The goods are made in many styles and sizes, thus adapting them to meet all reasonable requirements.

The Barstow Stove Company of Providence, R. I., are distributing some advertising novelties in the shape of fans which, in view of some of the weather recently experienced in the Eastern section of the country and which may be expected during the coming months, are both timely and appropriate. The front of each fan, which is of irregular outline and consists of a piece of cardboard attached to a wooden handle, is embellished with a picture in colors typifying some event of historic importance. On the other side reference is made to a number of the company's leading Ranges, such, for example, as the Bay State B Six-hole construction, the Bay State Home Grand, the Model B and the New Model Grand. These goods are constructed in a first-class manner, embody the modern features and are ornamented in a style to attract the trade.

The Stove trade of New York City arranged to close their places of business from Thursday night of this week until Monday morning, in order to thoroughly enjoy the holiday season, commencing with the Decoration Day celebration.

At an early hour on the morning of May 17, the extensive works of the Enterprise Stove Company at Vincennes, Ind., which gives employment to more than 100 hands, was visited by fire which practically destroyed the entire plant. The loss is placed at about $150,000, of which $75,000 is said to have been covered by insurance. According to press dispatches, six large buildings were destroyed with fully 10,000 Stoves. The company were established something like 15 years ago. We understand that it is their intention to rebuild the plant.

In a note relating to the Glazier Stove Company, in our issue of May 24, the address of the concern was inadvertently given as Chelsea, Mass. They are located at Chelsea, Mich.

The Prizer-Painter Stove & Heater Company of Reading, Pa., announce, by means of an attractive folder, that they are now occupying their building at 717 Grant street, Pittsburgh. The branch is under the charge of Charles W. Goodnough, as manager. In the display room is shown a complete line of the company's Stoves, Ranges and Furnaces. The warehouse and shipping facilities are the best for good service and it is the intention of the company to carry a large stock with a view of promptly filling the wants of their customers in the Pittsburgh district.

The American Stove & Furnace Company of Findlay, Ohio, have been incorporated with $25,000 capital stock with Frank Weber, president; S. F. Shafer, vice-president and general manager; John Shafer, secretary, and William McGowan, treasurer. The company will locate a factory in Findlay, and will manufacture a Sheet Iron Stove patented by Samuel Shafer. A number of orders have been secured.

At a meeting of the stockholders of the Pittsburgh Stove & Range Company, held in Pittsburgh on Monday, May 19, it was decided that in order to provide funds for the building of a central works at Beaver, Pa., the company would sell several properties which are not needed. These include the Graff works, at Monongahela City, Pa.; Walters works, Sharpsburg, Pa., and other parcels of real estate in the Pittsburgh district. It is the intention of the Pittsburgh Stove & Range Company to concentrate their different Stove plants located in the Pittsburgh district into one large works at Beaver, Pa. Active work on the new plant will be started in a short time.

Retail Hardware, Implement and Vehicle Association of the Indian Territory.

The third annual meeting of the Retail Hardware, Implement and Vehicle Association of the Indian Territory was held in Vinita on May 13 and 14. The first session was called to order in Byrd Ada Opera House at 8 p.m. on the 13th by Vice-President J. G. Smith of Canadian, in the absence of President Mowbray. Hon. Preston S. Davis welcomed the visiting dealers and the convention to Vinita in an eloquent address. Vice-President J. G. Smith responded, after which the convention was addressed by W. S. Thomas, president of the National Association of Implement Manufacturers, on the "Relations That Should Exist Between the Manufacturer and the Retailer." The convention adjourned at 9.30 to the Whitney dining room, where a very elaborate banquet was tendered the convention by the dealers of Vinita.

On Wednesday morning at 9.30 the convention was called to order by President Mowbray. Fred. Parkinson of Wagoner read a very able paper on "Trusts," which was interesting and instructive. This subject was discussed at length by quite a number of the members. Some of those who discussed this subject were: Vice-President J. G. Smith, Mr. Gee of Turner Hardware Company, W. S. Thomas of Springfield, Ohio; M. L. Corey, secretary of the National Retail Hardware Dealers' Association; J. B. McAlister, T. T. Pyle and President Mowbray.

The president appointed the following Committee on Resolutions: A. L. Severance, Fred. Parkinson, John N. McNabb, A. N. Green, E. C. Stretch.

E. C. Stretch of Vinita closed the morning session with an interesting paper on "The Implement Man as a Necessity."

The afternoon work was initiated by J. B. McAlister, who delivered an address on "How to Increase Your Sales."

In the absence of W. H. Durrough, who was on the programme for an address on "How Best to Meet the Competition of Catalogue Houses and Department Stores," Mr. Corey of the National Association took up this subject, and delivered a very able address, which was very much enjoyed by the entire convention.

South McAlister was selected for the next meeting place the second Tuesday in May, 1903.

New Officers.

The newly elected officers are as follows:

President, J. G. Smith, Canadian.
First Vice-President, Fred. Parkinson, Wagoner.
Second Vice-President, E. C. Stretch, Vinita.
Secretary, Sam. R. Frazee, Vinita.
Treasurer, J. B. McBride, Spero.

The following committees were named by the president:

Executive: J. N. McNabb, Wewaka; Ed. Lee, Vinita; A. L. Severance, Durant: A. Gibson, Mounds; J. B. McAlister, South McAlister.

Grievance: T. T. Pyle, Eufala; C. H. Thomas, Chicotah; J. B. Harrison, Afton.

Insurance: Thos. Hamm, Sallisow; Chas. Hunt, Vinita; R. H. Muzzy, Centralia.

The following resolutions were adopted:

Resolved, That we as retail Hardware, Implement and Vehicle dealers, in our third annual convention assembled at Vinita, I. T., declare ourselves opposed to trusts and favor wholesale dealers who are not in such combinations and who protect the interest of the retail dealer; that a copy of this resolution be mailed to all of the wholesale dealers in this section of the country.

Resolved, That we extend our sincere thanks to the past officers for the work so ably performed in the interest of this association for the past year.

Resolved, That we thank the dealers of Vinita for the royal entertainment which we have so much enjoyed since in their city, and for the elaborate banquet served by them.

The meeting then adjourned *sine die.* After adjournment the delegates enjoyed a tally-ho ride around the city as the guests of E. C. Stretch.

Arkansas Retail Hardware Dealers' Association.

The Arkansas Retail Hardware Dealers' Association will hold their third annual meeting at Little Rock, on June 18 and 19. An interesting programme has been prepared, including papers and discussions on a number of important topics. Among the papers which will be read are the following:

"What Effect Will the Combine of Large Hardware Companies Have on the Retailers?"

"The Most Important Things in Conducting a Hardware Business."

"Fakes and Fakirs, or Leg Pullers."

"Cash Registers *vs.* Cash Drawer."

H. D. Hull's Fiftieth Anniversary.

On the 13th inst. H. D. Hull, wholesale and retail dealer in hardware, stoves, house furnishing goods, &c., Troy, N. Y., completed his fiftieth year of mercantile life. Mr. Hull, who was recently elected president of the newly organized New York State Association of Retail Hardware Dealers, is now in the seventy-second year of his age. During his long and successful career he has witnessed many changes in trade, of which he writes as follows:

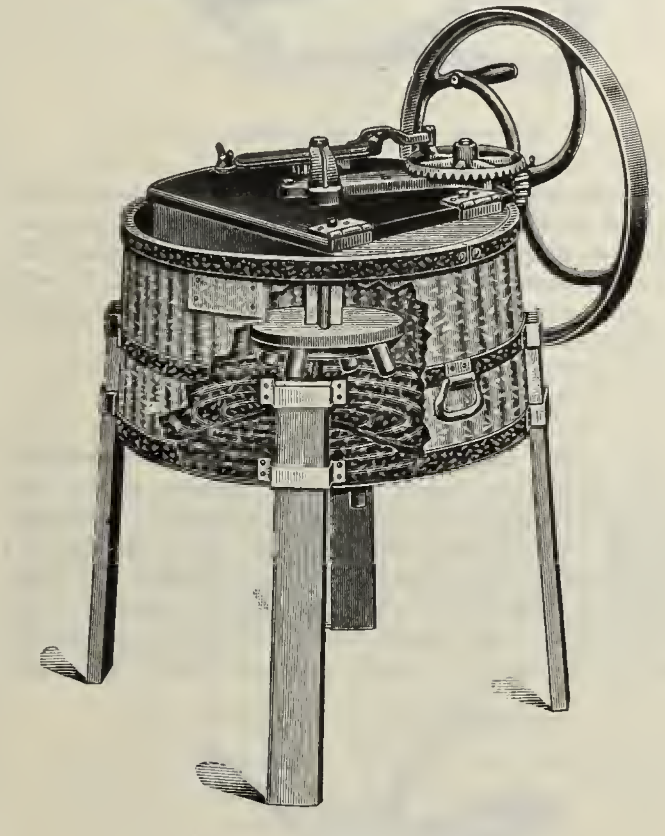
> What changes have taken place in my small sphere in the one-half century which I have been permitted to do business! Scarcely a man now doing business in this town who was then here and active. Either gone to their reward beyond the flood, where all must eventually go, or have taken Horace Greeley's advice, "Go West, young man."
>
> The manner of doing business has also greatly changed. Time was when each department of business had its own legitimate channel, and each person in business attended to his own affairs and all were happy and content. Each could make a good living, and customers were more content than now. Now all is changed. Trusts are being formed, even in the very necessities of life.
>
> Again, large stores are springing up, using goods which do not belong to their department of business, and cutting the very life out of them, in numerous cases having only samples to attract, and if a customer should ask for a quantity their reply would be, "We are just out." The retail dealers' associations hope in time to relieve this situation and teach the people they can buy the same goods directly through the regular channel and and not from illegitimate sources at equally as low prices and run no chances of getting swindled.

W. W. Luebkeman has lately embarked in business at Eau Claire, Wis., handling a line embracing Shelf and Heavy Hardware, Stoves and Tinware, Sporting and Athletic Goods, Mill Supplies, Paints, Oils, &c. Mr. Luebkeman will conduct both a wholesale and retail business.

Geo. F. Johnson & Son have succeeded G. F. Johnson in the Hardware, Stove and Sporting Goods business in Redfield, S. D.

The U. S. Steel Washing Machine.

The accompanying cut represents a galvanized steel washing machine put on the market by the United States Washing Machine Company, Chicago, Ill. The washer is of the rotary type, and the power is transmitted, it is remarked, in a manner as novel as it is effective. The speed of the pin wheel is variable, starting and stopping slowly, the speed being greatest midway between these points. It is explained that the variable speed secures the greatest possible agitation of the water, that it produces the smallest amount of wear on the parts and that it does away with the jar incident to the constantly changing direction of the pin wheel. The machine is right or left handed, as turning the crank in either direction produces the same motion of the pin wheel. The cover is made of two-ply wood and is secured to bolted hinges. When the cover is lifted it carries the fly wheel to one side, giving ample room to get at the interior. The sides and bottom of the washer are corrugated, producing a wash board surface. The joints are double seamed. There are three galvanized hoops securely riveted; the top hoop overlaps the top edge of the tub to make a smooth finish and to add to the general strength of the tub. The tub is galvanized after it is made, which is alluded to as an important feature. A fine quality of heavy sheet steel is used, it is stated, and after being put together and carefully seamed, closing all joints and uniting all parts, including the hoops, leakage is impossible. The wringer space will hold a large size wringer. The cover and legs are made of hard wood, nicely finished. The legs are secured by riveted cleats, and the machine weighs 65 pounds, so that it can be lifted and moved around. It is pointed out that the washer can be thoroughly cleaned, that it can be left in the sun all the week in the hottest and dryest climate; that there is not a crack for dirt to lodge or germs to collect; that the washer will not splinter or fall to pieces, and that it is always clean, sweet and satisfactory.

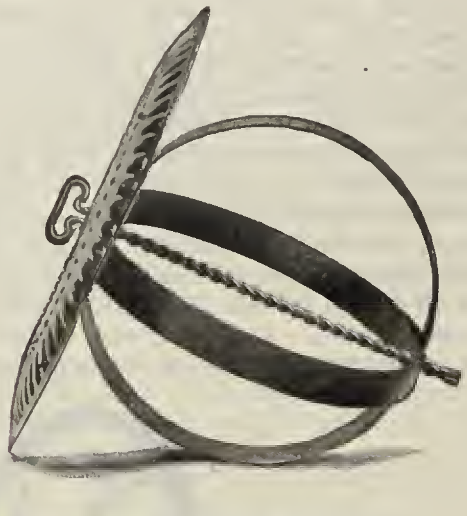


The U. S. Steel Washing Machine.

Witte Hardware Company, Aberdeen, S. D., have been incorporated with the following officers: A. C. Witte, president; Otto E. Mueller, vice-president and treasurer, and Arthur L. Mueller, secretary. They are successors to A. C. Witte in the wholesale and retail business in Shelf and Heavy Hardware, Stoves and Tinware, Sporting Goods, &c. The company have built a two-story brick addition, 25 x 62 feet, and also a warehouse, 25 x 140 feet, thus adding materially to their facilities.

The Perfect Flue Stop.

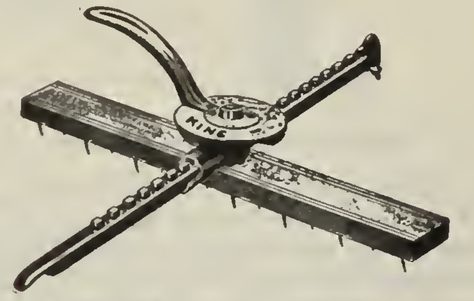
G. A. Higgins & Son, Galesburg, Ill., are manufacturing the patent Perfect flue stop illustrated herewith. The makers claim that this flue stop overcomes all objections found in other devices of the kind on the market. It is easily and firmly fastened in place by turning the rod in the center of the stop, and is so constructed that rust will not prevent the easy removal of the flue. These flue stops are manufactured in three grades: No. 1, with ornamental cover and two hoops; No. 2, with japanned cover and two hoops, and No. 3, with japanned cover and one hoop.



The Perfect Flue Stop.

The King Carpet Stretcher.

The carpet stretcher shown herewith is offered by the W. E. Sitterly Novelty Works, Auburn, N. Y. The stretcher consists of a metal bar, swiveled to a wooden cross head. The small knobs on the top of the bar are round, between which semicircles, underneath the round part of the handle, work. The teeth underneath the wooden cross head are on a slant so as not to tear the carpet. The handle is center draft, so that it locks and holds itself wherever the operator stops the handle. In use the hook at the end of the bar is driven in the floor near the base board, and the teeth in the cross head are pushed into the carpet. The handle is then turned to the right, which draws the cross bar toward the hook, thus stretching the carpet. The carpet is tacked, the stretcher is then moved along, and the operation is repeated. The cross head working on a swivel so adjusts itself to the carpet that the carpet is stretched where it most needs it. The manufacturers state that every piece of casting is warranted, and that they will replace any that break.



The King Carpet Stretcher.

Morse Hardware Company, wholesale and retail dealers in Hardware, Ship Chandlery and Metals, Stoves, Sporting Goods, Iron and Steel, Mining, Mill, Fish Cannery and Lumbermen's Supplies, Lime, Cement, &c., Whatcom, Wash., are about to erect a new building, which will have a frontage of 56¼ feet and a depth of 115 feet, with three floors, including basement. The establishment will contain all modern improvements. A railroad switch directly in the rear of the building will enable them to unload from car to basement floor. The constructing material will be of a fine grade of sandstone and hard brick. The steady growth of their business has compelled the company to erect this building, which will fully double their present floor space. The present quarters will in the future be used as the wholesale department.

Stove and Hardware Dealers.

The Fanner Mfg. Company, Cleveland, Ohio, have just begun the manufacture of Arctic Fruit and Vegetable Presses. These are Hand Presses, and are made in two shapes. They are referred to as made of first-class material and well tinned.

B. W. Crone has bought the Hardware and Stove business of W. J. Ohlheiser, at Juniata, Neb., and will continue at the old stand.

James Alexander, dealer in Hardware, Farm Implements, Stoves and Buggies and Wagons, Orchard, Neb., has lately moved into a new building.

D. A. Utiger is successor to Mackay & Utiger in the Hardware, Stove and Farming Implement business in Mena, Ark.

Hoy & Schroeder, Hardware dealers, Postville, Iowa, have been succeeded by Schroeder & Stone. The firm are dealers in Shelf and Heavy Hardware, Tinware, Sporting Goods, Stoves and Furnaces, Plumbing and Gas Fitting Supplies, &c.

John Eilerts has lately opened a store in Charlestown, O. T., handling Shelf Hardware and Tinware.

Webb Bros. have succeeded M. W. Webb in the Hardware, Stove, Agricultural Implement, Sporting Goods, Wagon and Buggy business in Itasca, Texas. In the fall the firm will build a Harness and Saddle factory.

The quantity of soot discharged into the air by soft coal used as fuel is very great. An English chemist took a sample of snow, which had been lying in the streets of Manchester for ten days, melted it and discovered that the residuum weighed at the rate of 3 tons per square mile. Forty-eight and six-tenths of this was pure carbon, six and nine-tenths heavy oil and grease, the remainder being ashes. Thirty tons of soot mixed with 2 tons of grease to make it stick well to buildings, distributed over city limits generally is an appalling amount, and accounts for the dingy appearance of thoroughfares. Dr. Knecht of the London Technological School also experimented in the same direction upon snow that had been exposed nine days, and found three times as much soot, possibly because three times the amount of coal had been burned in the vicinity.

The gas pipe industry has been given a tremendous "boost" in the United Kingdom by the approaching coronation. Gas tube makers and gas fitters all over the country are reported as crowded with work in the preparation and placing in position of gas tubing for illumination purposes. There is an immense demand for devices in the shape of crowns, coronets, royal monograms, loyal mottoes, &c.

M. Toch of the New York Society of Chemical Industry gives the following recipe for a paint for iron, which he claims will outwear red lead: Seventy per cent. of barytes, 10 per cent. of carbon black, 10 per cent. of zinc oxide and 10 per cent. of graphite ground in pure linseed oil containing a sufficient quantity of driers. If this paint and red lead are each painted over a rusty surface, says Mr. Toch, scales of rust will break through the red lead much more quickly than they will through the black paint containing barytes.

A French savant and inventor has recently been trying some interesting experiments with acetylene gas as a source of high temperature. He finds that, with the non-luminous flame produced, enough heat is generated to melt platinum in a few seconds. By the process he employs the disadvantages of the electric furnace and the oxyhydrogen blowpipe are altogether avoided.

CONFERENCES IN THE PLUMBING TRADE.

Although not an assured fact, available reports indicate the strong probability of a conference in the plumbing trade. Some time since President Hornbrook of the National Association of Master Plumbers and Chairman Torrance of the National Committee of the Confederated Supply Associations, met in the Auditorium Hotel in Chicago, and discussed the advisability of holding a conference with a view to adjusting the differences which exist between the master plumbers and the supply trade. The meeting was a purely informal one, but it has resulted in a movement which may culminate in a meeting between the executive committees of these two bodies at Atlantic City on June 13 and 14.

It is well known in the trade that the master plumbers substituted what is known as the Cleveland Resolutions for the New York Conference Resolutions, and that the National Committee of the Confederated Supply Associations shortly afterward had a meeting in Chicago and adopted what is known as the Chicago Resolutions. These sets of resolutions are somewhat at variance, and, in a measure, irreconcilable. One of the principal features of the Cleveland Resolutions is the lack of any provision for conference or arbitration on matters of difference. Conservative plumbers recognize that a substantial measure of trade protection is enjoyed by them. The manufacturers, on the other hand, recognize and support the principle of trade protection; consequently, there should be no difficulty in reaching an agreement that would be mutually satisfactory. All that is required to accomplish this is a disposition to make concessions in minor matters, rather than to rigidly adhere to the different positions already taken by the two bodies. It is to be hoped for the good of the whole trade that the strain in the relations now obtaining between the two interests will be removed. No benefit is derived when two all important branches of any industry or trade are operating under an armistice.

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Andrew Carnegie, Plumber.

Andrew Carnegie has been admitted to membership in the plumbing fraternity on the other side of the water, the freedom of the Worshipful Company of Plumbers having been presented to him with due ceremony, in the council chamber of the Guildhall, London, on May 14. The casket containing the freedom is of silver, bound with steel and ornamented with steel and enamel. It is a reproduction in miniature of an ancient muniment chest belonging to the company, and containing its ordinances (drawn up in the reign of Edward III), which was saved from the great fire of 1666. One of these ordinances, by the way, is to the effect that the competency of a plumber shall be certified "by assent of the best and most skilled man in the trade testifying that he knows how well and lawfully to work, and to do his work so that the trade may not be scandalized or the commonalty damaged and deceived by folks who do not know their trade."

The casket stands upon four steel supports, and in front bears the lines from George Herbert,

> Who shuts his hand hath lost his gold,
> Who opens it hath it twice told,

in enamel. The key is of gold, the head being in the shape of a thistle set in jewels. Within the lid of the casket is a rising sun in gold with the motto "Let there be light" (which is supposed to be Mr. Carnegie's favorite quotation), and the arms of the United States and of Scotland. The casket contains a lead box made by T. L. Pitt, one of the company's registered plumbers. The box is constructed with burnt seams, the bottom being formed of the obverse and reverse of the company's medal, also in lead. The three materials (silver, steel and lead), of which the casket is made, represent, respectively, the conventional metal of city caskets, the metal out of which Mr. Carnegie made his fortune, and that especially associated with the craft of plumbing. The inner box contains a certificate of freedom and a copy of the resolution of the court conferring that freedom upon Mr. Carnegie.

ASSOCIATION NEWS.

Manhattan Branch Arrangements for Atlantic City.

The delegates elected to represent, at the Atlantic City Convention, the Manhattan Branch of the Master Plumbers' Association of Greater New York, held a meeting and organized with President A. H. Brown as chairman. Various committees were appointed to attend to special convention business. The Transportation Committee, composed of John Mitchell, Jonas A. Rossman and Frank Reynolds, have arranged with J. Heroy of the Central Railroad of New Jersey to go to Atlantic City by that route. A special train will leave New York on Monday, June 16, at 3.40 p.m., and the fare for a 15-day round trip ticket will be $4.75. The committee have also made arrangements for a special rate for delegates at the Hotel Rudolf.

The Master Plumbers' Association of Bridgeport, Conn., have elected the following delegates to the convention of the National Association of Master Plumbers, to be held in Atlantic City, June 17-19: J. T. Brady, L. H. Mills. M. W. Manwaring and F. C. Booth.

The advance reports from all sections indicate that the Atlantic City convention of the National Association of Master Plumbers will be a large one. It is a long way for the Western men to come, but it is said that they have interests to look after that will bring them East in full force.

Some effort will be made to secure a more even representation in the new officers of the National Association. This year all the officers and a majority of the cabinet are from the West. These facts may be the basis of interesting developments.

The East is undisturbed in the enjoyment of what seem to be satisfactory relations between the plumbers and the supply trade; but late reports come from Chicago of a complaint to the Government authorities against the National Association. The count contains numerous charges.

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An Electric Heating Device.

A system of heating houses and cars which combines the hot water and electrical systems, says the Boston *Transcript*, has been devised by a New Haven inventor. It is claimed to represent high efficiency and to give a uniform and most pleasant heat. The heater itself is made up of but few parts and is yet durable and inexpensive. It is composed of castings which form the connecting heads and circulating flue or water chambers, around which are placed the electric coils of high resistance. The latter are perfectly insulated by lava and specially prepared cement. The heads of the castings are made to receive iron plates, which are held in place by screws, and form a casting around the coils. The heat is controlled by a switch made to use in connection with this heater, and with its use the current is reduced without the aid of any external resistance, thereby keeping all the heat within the heating apparatus. In the application of this system the electric water heater is placed in the cellar in place of the ordinary coal burner, the rest of the plant being the same as with the ordinary water heating installation. The controlling switch may be located in any part of the house that may be desired, from which point the temperature of the entire structure may be regulated. The convenience of such a system will be apparent to any one. There is no handling of fuel or ashes, and there is also the advantage of instant adjustment. The principle has been applied to the radiator with an expansion tank and pig and circulating pipes, thus forming a portable electric heating system with a flexible cord connection with the electric light bracket.

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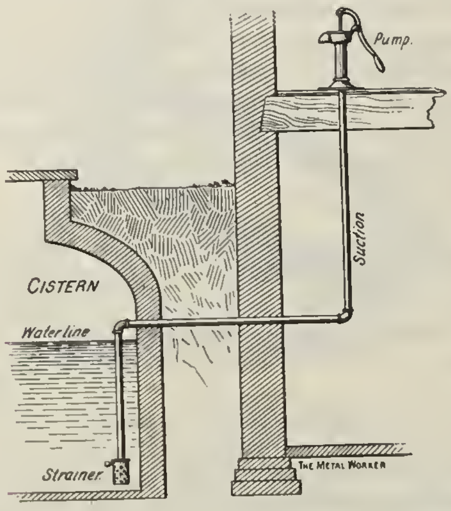
A FIRE visited the plumbing establishment of M. Chrystal at Summit, N. J., last week

HOUSE PUMP SUCTIONS.

BY HELMAR

House pump suctions vary in the method of installation, according to conditions. Ordinary lift and lift and force pumps trip the lower and basket valves by merely lifting the handle as high as it will go, thus draining the suction, discharge and pump cylinder, unless there are check valves in the pipe. On force pumps, if there is a valve in the air chamber or discharge, a pet cock must be tapped in below it to drain the pump and suction, and means for emptying the discharge must be made, if it is desired to drain it at all. No pump should be expected to lift water satisfactorily over 25 feet vertical lift. The suction must be air tight and as free of abrupt turns as possible.



House Pump Suctions.—Fig. 1.—Pitcher Pump with Set Screw Strainer.

Cisterns are often the source of supply. The cistern bottom is usually arched upward to prevent water pressure from cracking it. If the suction pipe drops in the center of such a cistern a closed bottom strainer resting on the cistern bottom is sufficient, or the end of the suction pipe may be tapped and plugged and perforated near the bottom with small drilled holes aggregating ample area to supply the suction pipe. If the suction runs down at one side of the cistern, as shown in Figs. 1 and 2, it must be kept several inches above the bottom, so as to keep it free from the accumulation of sediment which drifts toward the inclosing wall. On long runs and extra high lifts a foot valve is sometimes placed on the end of the suction. In such cases the suction cannot be drained by lifting the pump handle alone, but it may be drained back to below freezing point by placing a stop and waste or three-way cock in the suction, in the ground between the cistern and the house, as shown in Fig. 2. This cock must first be turned off and then the handle of the pump held or propped up long enough to permit the suction to empty.

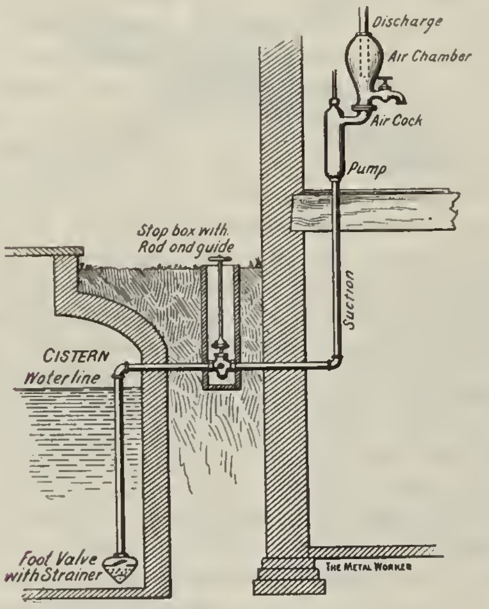


Fig. 2.—Force Pump and Connections.

A stop and waste takes much longer to empty the pipe than does a three-way cock, because the waste hole is small.

Where the pump suction is taken from the street supply in order to elevate water to a tank for use on the upper floor, as is done when the street pressure is inadequate, a piece of pipe larger than the usual house service is wiped in and the suction branched into it, as shown in Fig. 3. An air chamber is set upright on this enlarged part. The street pressure compresses the air in the chamber and partly fills it with water. This surplus of water is available to supply the pump suction more rapidly and uniformly than the low pressure street service could without such a reservoir to draw from. The chamber maintains its surplus by filling, while the down stroke of the pump is being made. The chamber should have an air cock in the top, so that it may be refilled with air if necessary. When the pump suction is taken from the house service a check valve should be placed on the street supply to the range boiler, otherwise the use of faucets may interfere or water may be sucked from the boiler.

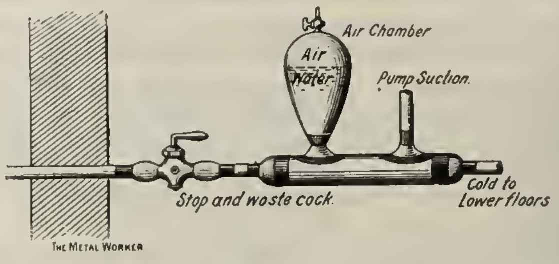


Fig. 3.—Service Pipe Enlarged for Pump Suction Reservoir.

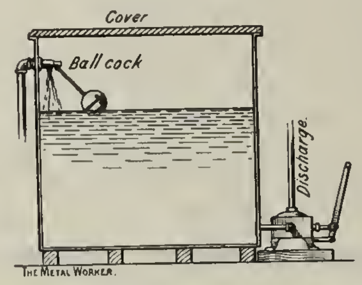


Fig. 4.—Pump Connected with Suction Tank.

To avoid excessive pressure street supplies are sometimes turned into a basement tank, as shown in Fig. 4, the tank being covered (not air tight) to keep out foreign matter, and the supply controlled by a ball cock in the tank operated by the rise and fall of the water. The pump suction is taken from near the bottom of the tank. The pump then fills by gravity, and the labor of pumping includes only that of lifting the water to the house supply tank. This is also true of pumping from the street service, unless the pump overtaxes the capacity of the service.

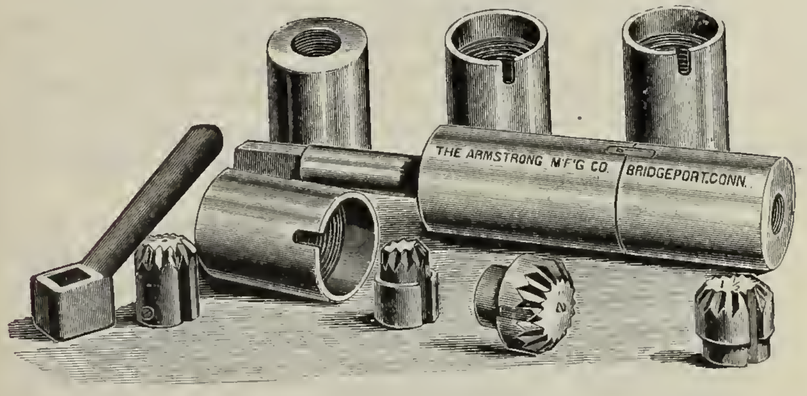
The Richmond Boilers.

An especially fine catalogue has been issued by the Richmond Stove Company, Norwich, Conn., devoted to the Richmond line of steam and hot water apparatus. The cover shows one of the new Richmond magazine feed heaters in red, while the words " Richmond, Heaters That Heat," are embossed on the brown surface. These words also occupy the left hand corner at the top of each page. The catalogue is printed in two colors, and opens with a very interesting explanation of the construction of house heating boilers. The special features of the new line of large sized Richmond heaters is the provision of a magazine, so that the boilers are either surface burning or magazine feed, at the desire of the purchaser. The magazines are said to hold sufficient fuel to maintain the fire from 36 to 48 hours. By means of general and broken views and views of the boilers partly assembled, with the different parts, the construction and the fire travel may be readily understood. Diagram cuts are also presented, so that the arrangement of the various parts can be fully comprehended. These boilers are made in nine different sizes, composed of from 4 to 12 sections, with grates 30 inches wide and rated to carry from 600 to 1800 square feet of direct steam radiation, and from 1000 to 3000 square feet of direct hot water radiation.

The last portion of the catalogue is devoted to round Richmond boilers. These are made for both steam and hot water, with grates 18, 21, 24 and 27 inches in diameter. Smaller heaters are also made designed for smaller work, such as heating water in storage tanks for supplying apartment houses, for greenhouse work and similar purposes. The catalogue is a fine piece of trade literature, and in the new self feeding vertical sectional boilers presents an apparatus which will be studied with interest by the heating trade.

The Armstrong Nipple Holder.

The nipple holder shown herewith is made by the Armstrong Mfg. Company, Bridgeport, Conn., to be used in connection with their No. 00 pipe threading machine. It holds pipe from 1 to 4 inches inclusive by using different threaded rings and backing pieces. It will also hold close nipples either right hand or left hand, no change of parts being necessary to hold the nipple for threading it left hand. When the thread is cut the nipple can be removed with the fingers by loosening the screw in the back of the holder. This nipple holder can be furnished to hold pipe as small as ¾ inch if required.


THE ARMSTRONG MF'G CO.
BRIDGEPORT, CONN.

The Armstrong Nipple Holder.

The Standard Sanitary Mfg. Company in the South.

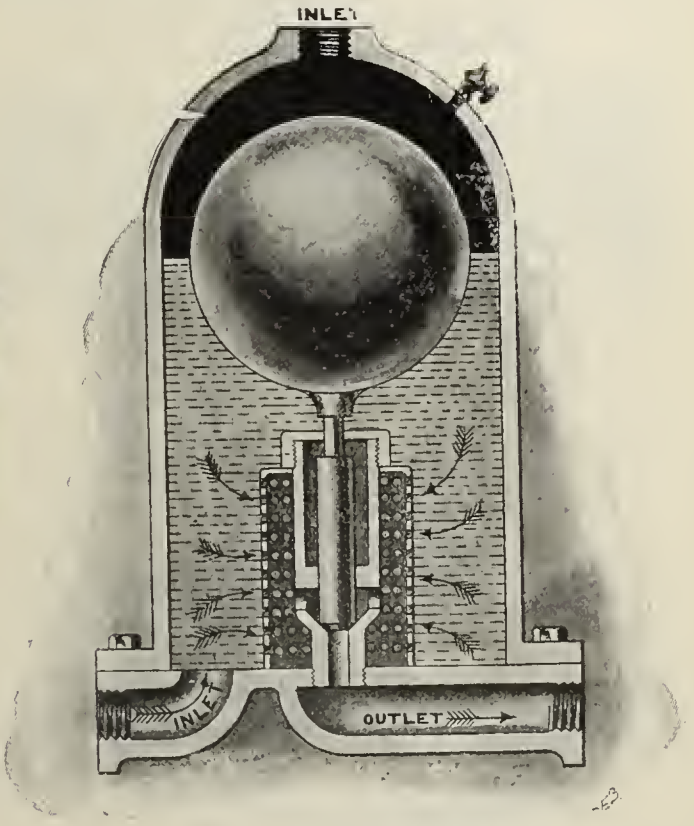
The ownership of the property at the corner of Baronne and St. Joseph streets, New Orleans, La., says the *Picayune* of that city, is no longer a mystery. It is known that the purchasers are the Standard Sanitary Mfg. Company of Pittsburgh, Pa., one of the largest manufacturers of plumbers' supplies in the country. Ahrens & Ott, who have been carrying on business here for the past two years, at the corner of Common and South Peters streets, and with two other warehouses, may be said to be the house here. It is now proposed to put all the local business under one roof. Jules Tschopik, manager of the New Orleans house, has given out the following information:

The style and proportions of the building will be determined from Pittsburgh. The land is 160 x 160. The site is not only central to the business portion of the city, but the location is one which is passed by a vast number of people, and affords a fine opportunity to show goods. We do not sell to consumers, but to plumbing establishments and dealers. Our aim is to have the public see what sort of goods we have and to afford our customers an opportunity to examine them. We will begin the construction of the building as soon as the examination of titles, &c., is perfected, and intend to be located there by the first of the year. The building will be a handsome one, of mill construction.

J. W. Cuff & Co., Philadelphia, bid $4488 and secured the contract for installing the heating plant in the Landreth School in that city.

A Low Pressure Grease Trap.

Since the custom of utilizing exhaust steam for heating and other purposes has become so general, and the return of the condensation to the boiler is a common practice, the necessity for some method of separating the grease from the condensation to prevent its detrimental effect in a boiler has been recognized, and has led to the production of appliances for this purpose. In the accompanying illustration is shown a new low pressure grease trap manufactured by Kieley & Mueller, 7 to 17 West Thirteenth street, New York City. The sectional view renders the operation readily understood. With this trap the condensation rises until the float is lifted directly off the valve seat, there being no intermediate lever or connections. Surrounding the valve and its outlet is an internal strainer pipe, by means of which all matter that should not pass through the valve is prevented from passing and lodging on the seat. The trap is made in two parts, an upper shell and a bottom plate. As all the pipes are connected with the bottom plate the upper shell can be readily taken off and the parts cleaned without disconnecting a single pipe, should the trap at any time become actually filled or stopped with dirt. The area of the valve is very large in proportion to the low pressure under which it is designed to act; consequently it has a large discharging capacity. It is made for all sizes of pipe from ¾ to 3 inches in diameter, and is capable of taking care of the condensation from 4000 to 50,000 lineal feet of 1-inch pipe.



A Low Pressure Grease Trap.

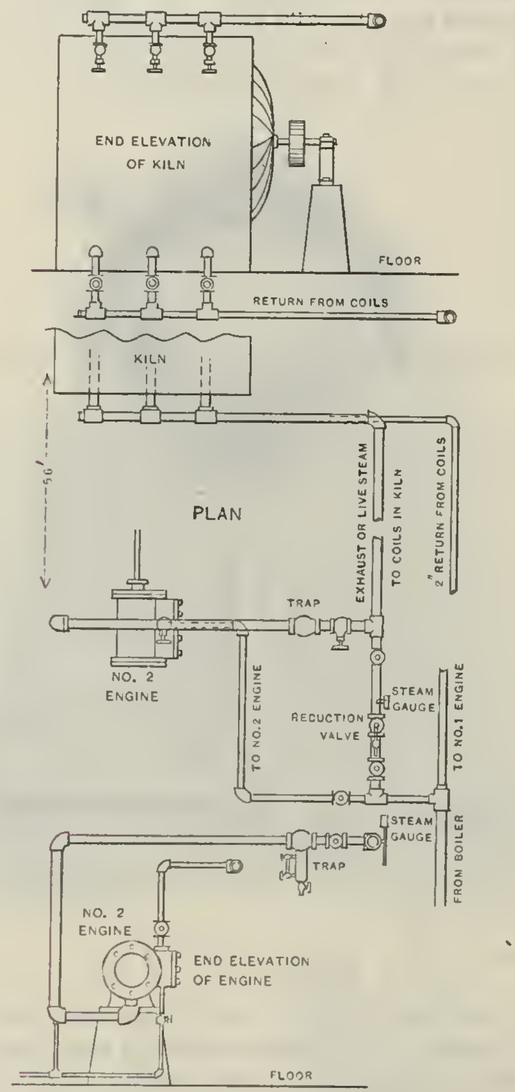
Disk Fans.

The American Blower Company of Detroit, Mich., have sent us a copy of their 38-page catalogue, No. 140, devoted to A B C disk ventilating fans. The company state that there has been an increase in the demand for disk fans for ventilating all types of buildings; not only in large buildings where a change of air is necessary to maintain purity, but also in factories for the removal of smoke, noxious fumes, gases, steam and dust, and for cooling overheated apartments, also for drying apparatus. The engravings in the catalogue show various types of these fans, with the different parts removed, so that the construction and operation, whether to be set horizontally or vertically, can be readily understood. The fans are shown designed to be driven by pulleys or direct connected engines and electrical motors. For the various fans there are tables giving full dimensions and their capacity. The last pages of the catalogue contain tables giving useful information for all who must figure up the various work that must be made in the installation of fans and the piping used in connection with them. The last four pages show hot blast apparatus, pressure blowers and mechanical draft systems for use in connection with boilers.

"KINKS" THAT CONFRONTED A STEAM FITTER.

BY "SID."

Early last spring a certain corporation, too small probably to be called a trust, but still having an absolute monopoly on their line of goods, decided to leave a city where they were dictated to by unions, and paying city taxes could only declare a quarterly dividend of 9 per cent., and move to a town where they could get a free site, "cheap" labor and "unlimited" water power. So their general manager picked out the town, leased his water power and reported that he could build and install a plant of double their former capacity for a certain amount of money in three months. At the end of the time the building was not done, to say nothing of installing machinery, &c.; four months more, not done yet. At the end of five months the general manager (by the way, the G. M. was a dentist by trade and no doubt was a "drawing" card at that business, but as the head of a manufacturing concern was a dismal failure) reported great progress, but said that the money was nearly gone and he was very sorry, but he would need at least double the amount to complete the mill. Then there was consternation among the directors and the president was sent to investigate. He came, he saw and nearly fell dead. Then he relegated the G. M. to the rear, with orders to assume a semi-recumbent position. The president appointed in his place a fine, clear headed business man, who, although not a practical mechanic, knew what he and the mill wanted.



THE METAL WORKER

Kinks that Confronted a Steam Fitter.

It was at this stage of the game that the writer was called in as consulting engineer. In his 25 years of all round experience he never saw anything like it, but will try to tell something of it. To illustrate: The "unlimited" water power was on an island and there was installed the generator, without any governor. The power was carried over on cables to three motors. The largest motor, designed for No. 1 shaft, was set in the basement wedged in between a pulp beater and a wet paper machine, where there is a constant spray of water and from ½ inch to 6 inches of water on the floor all the time. But this is mild compared to some of the "kinks."

The G. M. wished to tear everything out and start right. He was not allowed to do so, but ordered to get out some material any old way, so as to satisfy the directors. So by hook and crook and strenuous ten-hour a day work we got the mill ready to run (?) in three weeks. They started up, and the first move was to burn out the generator. Another delay. Meanwhile we were doing the best we could to straighten out the "kinks" in the pipe work and the weather was becoming so cold that steam heat became necessary, when along came an order for economy. "Too much skilled labor." "Pay rolls too big." "Must use up old material.". "Cut down your bills," &c. So the steam fitters were discharged and we were forced to use as fitters men who could hardly tell a 45-degree ell from a pair of chain tongs. But as we are blessed with a good pair of lungs and have a large assorted vocabulary of pet words, we did not mind this so much. But when it is "hurry, hurry," to have to use old pipe and fittings is —well, no picnic.

At last they started up, and it was found that the water wheel would not furnish power for lights and the large motor, to say nothing about the other two, while No. 1 engine was set so it could not couple on to the main shaft. So we were obliged to run another line of shafting and divide the power. This was O. K. until we got heat in the building. Then, as was expected, we found the boilers too small, although the condensed steam, exhaust and all, was returned to them. By using forced draft and hard work we managed to keep running. The came the freeze up in the river and down went the water power. This, they found out, was the regular thing every winter and no one depended on their water wheels.

Well, something had to be "did" and that sudden and somewhere. In some scrap heap the G. M. found an engine and she was a curiosity. Well, we set her up and then came the question, "From where will you get your steam to drive her?" The boilers were already overloaded and could not stand any more. We got around this by piping her as per sketch, which, of course, does not show the swing joints for expansion or other small matters. As will be seen, we take our live steam so as to by-pass the reducing valve, and run our exhaust line back into a live steam line to the kiln. The coils in the kiln are 56 feet from No. 2 engine and are 1½-inch return bend pattern, 30 pipes high and 10 feet 8 inches long. They are divided into three eight-branch coils. They were laid out for live steam only, as will be seen by the size of the return—2 inches. The cold air is forced through the coils by a 6-foot fan.

The questions we had to answer were: Would we be able to maintain the requisite heat in the kiln with exhaust steam? Would not the back pressure on the engine be excessive? We solved the first question by regulating the speed of the fan, the cold air and the ventilating ducts. To overcome the second we by-passed the trap and connected the return direct to the suction of the boiler feed pump, between the pump and the receiving tank, so that the back pressure is so light it will not show on a low pressure gauge.

I am pleased to report that the corporation have decided to install a high class steam generating plant and drop the "unlimited" water power.

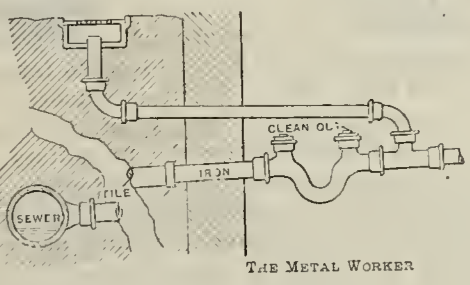
Hanlon & Murphy of Hartford, Conn., have the contract for plumbing the new hospital building in that city.

A Popular Form of Sewer Connection.

The various methods of making sewer connections prevailing in different places have been given in *The Metal Worker* from time to time. The form of connection most generally used and recommended by a majority of sanitary engineers, particularly where large brick main sewers are possible, involves the use of the front wall or intercepting trap, and it is also used in many cases where terra cotta sewers are laid. Our readers will find some interest in the practices followed in this work in different cities, as described in the following letters:

A plumber in Newark, N. J., says:

In connecting with the sewer in our city, salt glazed tiling is carried from the street sewer to a point within 5 feet of the building line, where extra heavy cast iron soil pipe is connected and carried inside the wall. At this point an extra heavy cast iron running trap is placed, provided with two hand holes for cleaning out. Into this opening we calk clean outs for screw ferrules. Just inside of the trap we place a tee branch, from which we run a 4-inch fresh air intake to the curb, or some other convenient point away from any window. Outside of the building good salt glazed pipe may be used with perfect confidence, and it should be connected above the ordinary flow level in the sewer, using good Portland cement at the point of connection and for sealing all the joints in the pipe. Of course, extra heavy cast iron soil pipe makes a very substantial job, but it is unnecessary except in quicksand or marshy soil. When tiling is used, however, care should be taken to see that it has a good solid bed and is properly supported. The drain should have a pitch of not less than ¼ inch to the foot all the way from the house to the sewer, to insure satisfactory flow and disposal of the household waste. Our method of connecting the house drain with a sewer, locating the running trap and the fresh air inlet pipe, is shown in the accompanying sketch (Fig. 1). In my opinion there is no objection to the use of the front wall trap. If the opening in the wall through which the soil pipe runs is protected by means of cement and crushed stone on the inside it will prevent surface water from running down the wall and entering the cellar.



A Popular Form of Sewer Connection.—Fig. 1.—A Newark, N. J., Connection.

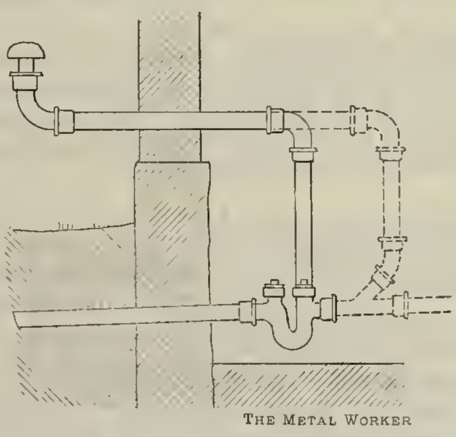


Fig. 2.—Showing the Practice in Barre, Vt.

A correspondent of Barre, Vt., presents in Fig. 2 the method of connecting the intercepting trap and fresh air inlet followed in that locality. Glazed terra cotta pipe is carried to within 5 feet of the house wall when cast iron soil pipe is used. The opinion is expressed that a sewer should be entered by the house drain with the same pitch that it has when it leaves the house, regardless of how deep the sewer may be, and the grade should never be less than ¼ inch to the foot. The solid lines in the sketch show the way that the fresh air inlet is ordinarily connected, while the dotted lines show what is considered a better way.

A plumber in Bay City, Mich., writes that the main sewers are in the middle of the streets, with laterals extending to the alleys. Some of the main sewers are made of brick and others of large salt glazed tile. In connecting the house sewers with the brick ones, openings are left for this purpose, generally on the sides of the mains, although sometimes on the top. These openings are, of course, closed until ready to receive the house sewer connection. The laterals connect with the main sewers always by means of Y branches. Glazed tile is carried from the sewer to within about 5 feet of the house, when cast iron soil pipe is taken, and just inside the wall, where it is readily accessible, a double hub running trap is generally used, the inside hub being used for the fresh air inlet connection, as shown in Fig. 3. This is carried up outside the building as far from the windows as possible, and is covered with a vent cap. The other opening in the trap is closed by means of a brass hand hole with a screw for the clean out which is going into the opening. The fixtures connected with the house drainage system are all provided with traps, and these traps are back vented. The drain pipe from the house is generally laid with a pitch of at least 1 inch in 10 feet, or more, if it can be had, and the connection with the sewer is made just a little above the center if the sewer is deep enough to allow it.

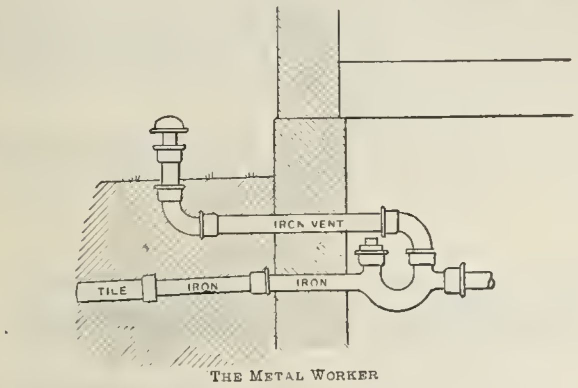


Fig. 3.—A Bay City, Mich., Connection.

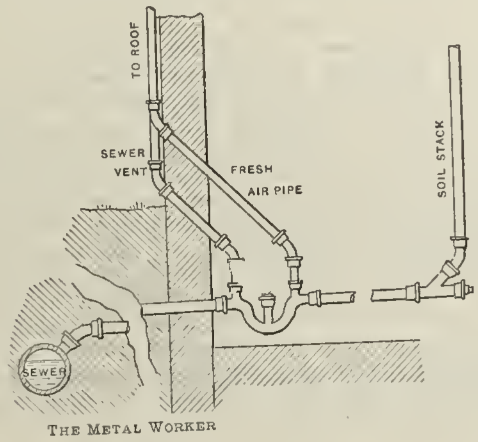


Fig. 4.—A Unique Connection Used in Seattle, Wash.

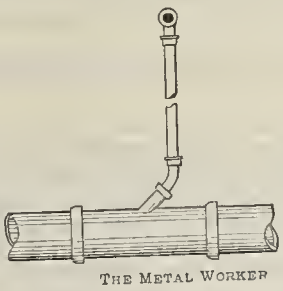


Fig. 5.—A Top Connection to a Terra Cotta Sewer.

A plumbing house in Seattle, Wash., state that it is the practice there to use glazed terra cotta pipe in connection with the sewer wherever circumstances will permit. The connection with the sewer is usually made at a point above the water level, and is given a pitch from the building of not less than ¼ inch to a foot, and more if possible.

In order to prevent water entering the cellar at the point where the pipe passes through, the outside wall is covered with cement. In order to separate the main sewer from the building a running trap is used, and to avoid the disagreeable odors that arise from the fresh air inlet, two pipes are carried up from the openings on the running trap to the roof of the building, as shown in Fig. 4. This ventilates the sewer and also the drainage system in the building.

A correspondent in Webster, Mass., explains methods of making sewer connections which have been found satisfactory in his experience. The process of making connections with the main sewer, which in smaller towns is quite generally made of terra cotta pipe, is explained as follows:

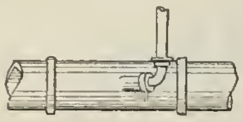


Fig. 6.—A Connection to a Side Branch.

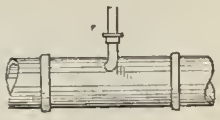


Fig. 7.—House Drain Connected by Cutting Hole in Main Pipe.

> In this section many of the sewers are laid from 12 to 18 feet deep, or deeper. When such sewers are laid branches to receive the house drain should be brought to within 7 or 8 feet of the surface. A Y should be placed in the main sewer, looking up to receive the vertical branch, as shown in the sketch herewith (Fig. 5). The vertical branch should be connected with the Y by means of a ⅛ bend. Where the main is not so deep—only 7 or 8 feet—it should be provided with a small Y branch on the side, so that by means of a ¼ bend the vertical drop to the house drain can be connected, as shown in Fig. 6. Sometimes a tile sewer is laid without an opening being left to receive the house drain. When it is necessary to tap the sewer, as shown in Fig. 7, an opening is cut by means of a cold chisel, care being used. This opening should be made to receive a long sweep 16 bend. The connection should be made above the water level in the sewer, and the joint at the point of connection should be carefully cemented and firmly supported.

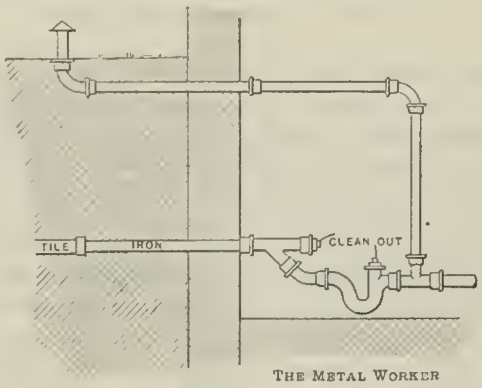


Fig. 8.—The Front Wall Connection.

> The house drain may then be run with glazed terra cotta pipe from the sewer connection to a point within 10 feet of the cellar wall, and should have a pitch of not less than ¼ inch to the foot. From this point extra heavy cast iron soil pipe should be carried through the front wall, and a Y connected with it, as shown in Fig. 8. One of the openings should be closed by means of a brass plug with clean out screw, being calked into the hub with lead. This should be on a straight run of the pipe, so that, in case of an obstruction, a rod can be used to open the drain. The other branch of the Y should receive a deep seal running trap made of heavy cast iron with a clean out opening on the house side.
>
> Two feet inside of this trap on the house side a tee should be placed for connecting a fresh air inlet to extend outside of the building above the surface of the ground, and covered with a cap to keep it from becoming clogged. The outer end should be so located that it will not discharge the foul air near any window or door. This fresh air inlet will protect the seal of the running trap by allowing air to escape from the house drain ahead of the water from fixtures that are flushed in the building. Where the cast iron pipe passes through the wall of a building the opening should not be tight around the pipes, but an arch should be left to allow for settling. Concrete or cement should be placed on the outside of the wall over where the pipes are laid, to prevent surface water soaking through.

Proposed Consolidation of Lead Pipe Manufacturers.

The reports current for some weeks past in regard to a projected consolidation of the various manufacturers of sheet lead, lead pipe and other manufactured lead products have become more circumstantial during the past week. It is claimed in some quarters that the project has advanced substantially and that 10 or 12 concerns engaged in this branch of manufacture are likely to become merged into a corporation with a capital of $15,000,000, which new company are likely to be in shape for incorporation under the laws of New Jersey at an early date. Inquiry in the trade elicits the fact, however, that several of the leading concerns engaged in the manufacture of lead products apart from white lead are unlikely to enter into a combination of this kind. Moreover, it is rumored that important lead pipe interest in the West, who are said not to have been considered by the promoters of the consolidation, have announced their intention of invading the Eastern market should the consolidation be formed. These interests, it is thought, would prove too strong competitors to enable a consolidation of the Eastern manufactured lead interests to be successful, especially if some of the larger manufacturers in the East are not parties thereto. Under these conditions the success of the efforts for a consolidation are regarded in the trade as decidedly problematical. The announcement of the practical consummation of the scheme, which appeared in some of the New York papers, is regarded as decidedly premature. It is quite likely that the whole project may fall through again, as it has done more than once in the past.

New York City Notes.

After spending many months of unceasing search and making inquiries by aid of United States consuls and commercial houses all over the world, Paul S. Bolger of 378 Park avenue at last found his son, Walter, this week on board the United States Training Ship "Franklin," at Norfolk Navy Yard.

⁂

William H. Cranston, who was formerly a well-known Third avenue master plumber and who has been living at 93 West 134th street, died last Saturday. Mr. Cranston was a member of the Master Plumbers' Association and many other societies.

⁂

Trade still continues to pick up. Frank Vermilyea has a large apartment at the corner of Broadway and 112th street, T. A. Hill is well along with a 12-story apartment hotel on Twenty-fifth street west of Broadway, Heuston & Corbitt have a large apartment at the corner of Broadway and Seventy-seventh street, Louis H. Wenzel has two private houses at Fifth avenue and Eighty-eighth street, Joseph Black has two apartment houses on 115th street east of Eighth avenue, John Frick has two tenements on Seventy-fifth street near Avenue A, Gerald Donnelly has a factory building on Fifty-sixth street near Eleventh avenue, and Thomas F. Gillick has a storage warehouse at 421-425 West Thirteenth street.

A LETTER from the Kennedy & Sullivan Mfg. Company, 73-75 Main street, Holyoke, Mass., informs us that, having agreeably adjusted the questions which induced them to discontinue the steam and hot water business branch of their business, they are now, as in the past, prepared to furnish all of the apparatus needed in a heating system, and also to install them at short notice. The company will be glad to receive from manufacturers of goods in this line their lowest quotations and trade literature.

Dial and Needle Point Valves.

The use of gasoline has been and is growing fast, and it is now being used to do all manner of work about the house or factory, furnishing heat, light and power. It is a well-known fact that ordinary valves, adapted for use on water or steam, are not suitable for the handling of gasoline. Ground key valves are also of little value, as valves of this style do not give proper control of the flow and soon leak. Fifteen years' experience and a disposition to make the best gasoline goods has enabled Clayton & Lambert Mfg. Company of Detroit, Mich., to make needle point valves that are said to be efficient in every way. Two new dial needle point valves which they have recently added to their line are shown herewith. By their use a close regulation can be had so that the flow of gasoline can be controlled. The valve shown in Fig. 1 is a ¼-inch female globe valve and that shown in Fig. 2 is a male valve. Each is constructed with a needle point and seat to regulate the flow of gasoline and has a dial to record the relative distance that it is open.

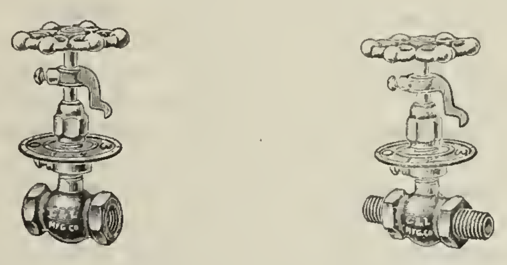


Fig. 1.—Female Valve. *Fig. 2.—Male Valve.*

Dial and Needle Point Valves.

Heating and Plumbing Notes.

The Horn & Brannen Mfg. Company of Philadelphia bid $10,000 and secured the contract for supplying the electric light and gas fixtures in the Central High School building in that city.

The Heating & Lighting Company of Norwalk, Mass., have the contract to place two Kelsey Warm Air Generators in the new school house at Westport. The plant will be provided with a ventilating system for changing the air frequently.

Samuel J. Kelly of New York City has been at Racine, Wis., with a view to establishing a Plumbing Supply manufacturing plant in that city.

J. H. Jordan of Philadelphia, Pa., bid $3756 and secured the contract for a new drainage system for the school at Bridesburg.

The Central Foundry Company, 116 Nassau street, New York City, have recently booked an order for 100 tons of Cast Iron Soil Pipe, varying from 2 to 6 inches in diameter, for shipment to the Philippines.

The United States Heater Company of Detroit, Mich., have recently rearranged their showroom at 127 Worth street, New York City, and now have samples of a varied line of Steam and Hot Water Heaters which they manufacture under the name Capitol, including everything from a Tank Heater to the round sectional Mascot Heaters and the large heavy duty vertical sectional Capitol Boilers of the latest design. Manager W. S. Newkirk and his assistant, C. F. Young, invite the trade in the vicinity of New York to examine this line and become familiar with its many features of merit and convenience to the steam fitter and the user.

In laying a new underground trolley system on Greenwich street, New York, the workmen uncovered, 4 feet below the surface, an old water main, consisting of a string of pine pump logs. The logs were 20 feet in length, having a bore of 4 inches, and were in good condition, except that the outer surface was rotten. It is said that these pipes are part of an old water system constructed by Aaron Burr.

The Aurora Acetylene Gas Company, Chattanooga, Tenn., have been awarded a gold medal on their machine at the Charleston Exposition. We are advised that they are getting more orders for their machine than their present capacity will permit them to fill.

The Acorn Brass Works, Chicago, have increased their capital stock from $50,000 to $100,000, and also increased the number of directors from three to five.

Cornell & Underhill, 43-47 Beach street, New York, sales agents for Spang, Chalfant & Co., announce that they are now prepared to furnish all sizes of Wrought Iron Pipe and Boiler Tubes from ⅛ to 20 inch, the Spang-Chalfant plant having been increased by an addition to the mill. The company are also equipped to cut all sizes of Pipe up to 18 inch, and desire to figure on sketch work and specifications.

William Lumb, one of the prominent plumbers of Boston, Mass., celebrated his eighty-third birthday last Saturday. Mr. Lumb is an Englishman by birth and an American by adoption, coming to America in 1840. He is a member of the British and Scotch charitable societies, of the Ancient and Honorable Artillery Company and a Mason of high degree. He is in remarkably good health.

W. M. Anderson has the contract to install a $6000 hot water heating system in St. Joseph's Orphanage, Philadelphia.

Andrew Young, Chief Sanitary Inspector of Chicago, is supporting an objection to a provision of an ordinance which requires a special appliance to be used in connection with waste pipes and sewers. It is claimed that the ordinance of the Health Department would require a connection, costing $3; whereas, the method of making the same connection in the usual way costs about 35 cents.

C. P. Vanderveer, who is well known to the heating trade, has engaged with Serrell & Schenck, 322 Broadway, the New York representatives of Warren, Webster & Co., Camden, N. J., manufacturers of Feed Water Heaters and Exhaust Steam Specialties.

The many friends in the heating trade of Judson A. Goodrich of the Judson A. Goodrich Company, 105 Beekman street, New York, will be glad to learn of the improvement in his health. He has been confined to his house for several months with a serious illness, but is now fast recovering his strength, and expects soon to be at his office attending to business as heretofore. He thanks his many friends in the trade for their substantial remembrances of him during his absence.

New Firms and Changes.

The Sunlight Lava Mfg. Company, Chattanooga, Tenn., have acquired the patents, business, &c., of the Sunlight Acetylene Gas Burner Company. Under new management and with increased facilities and improved apparatus the company will continue the manufacture of Tips for coal gas burners, acetylene burners, electric insulators, &c.

The American Plumbing & Mfg. Company of New York City have been incorporated with a capital of $25,000. The directors are: Henry H. Sommer, Bartholdi Sommer and Jacob Schattman of New York.

The Pittsburgh Valve & Fittings Company, Pittsburgh, Pa., have been incorporated with a capital of $200,000 by A. E. Anderson, Howard O. Turner and Guy D. Wallace.

The Steele & Robinson Company, who have recently been incorporated at Williamsport, Pa., with a capital of $50,000, will remodel the plant formerly used for making the Backus Heater, to suit their business. They will engage in the manufacture of Gray Iron Castings, Radiators and Steam and Hot Water Heaters, and expect to employ 50 men. George P. Steele has been elected president and general manager, and will have charge of the business and reside in Williamsport. William J. Robinson is the secretary and treasurer, and will have charge of the office and salesroom in Philadelphia.

The Norman Smoke Consumer & Fuel Company have been incorporated, with principal office at 419 Market street, Camden, N. J., to manufacture Boilers, Furnaces, &c., with a capital of $25,000. The incorporators are: F. R. Hansell, Geo. H. B. Martin and Wm. F. Eldell.

Pattern for Coffee Pot.

(Without Allowance for Laps.)

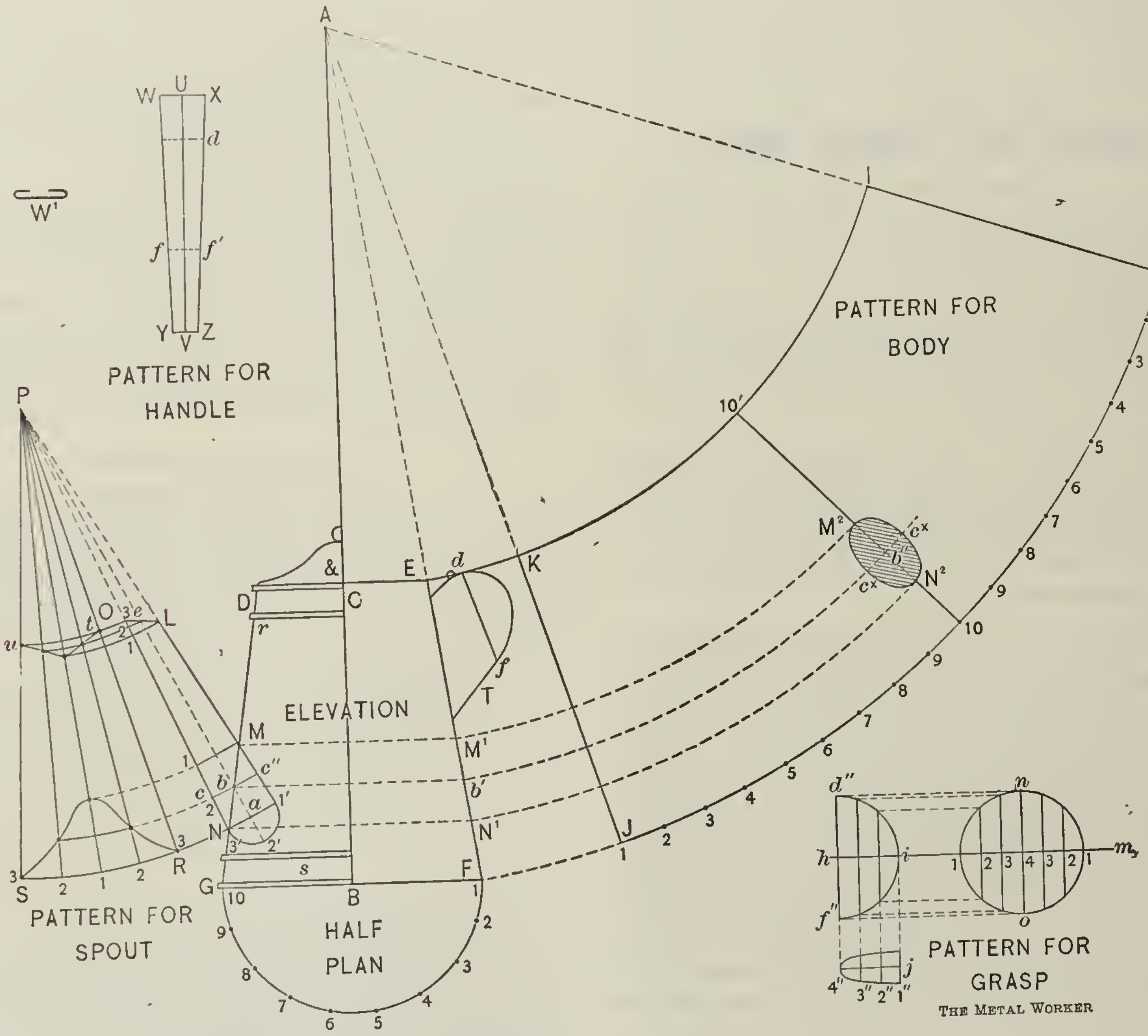
It often happens that a customer desires some special piece of tinware made that is not kept in stock, such as a coffee pot of IXX tin. A persepective view of such an article is shown in Fig. 1. Patterns of this kind that are developed should be preserved for future use.

In developing the patterns proceed as shown in Fig. 2. First draw any vertical line, as A B, upon which place the hight of the coffee pot, as B C. At right angles to B C draw the top diameter D E and the bottom G F, placing one-half diameter of each on either side of the center line, as shown. Now draw the lines D G and F E, extending F E until it intersects the center line A B at A. Then will A be the center point from which to strike the pattern. Now, with B as center and B F as radius, draw the half plan of the bottom F 6 G, which divide into equal spaces, as shown by the small figures 1 to 10. With A as center and radii equal to A E and A F draw the arcs J H and K I, as shown. From J draw a line toward the apex A, intersecting the arc K I at K. Now, starting from the point J, lay off on J H the stretchout of twice the amount of the half plan G 6 F, as shown by the small figures 1 to 10 to 1 on the arc J H. From H draw a line to the apex A, intersecting the arc K I at I. Then will I H J K be the pattern for the body of the pot.

Pattern for Coffee Pot.—Fig. 1.—Perspective View of Coffee Pot.

In its proper position draw the outline of the spout, as shown by L M N O, intersecting the body of the coffee pot D G at M and N, while L O represents the opening of the spout at the top. Now extend the lines N O and M L until they intersect each other at P. Now, using P as center and P N as radius, describe the arc N 1′, which intersect by the line L M extended at 1′. Draw a line from N to 1′, which bisect and obtain the point *a*. Then, with *a* as center and *a* N as radius, describe the semicircle shown, which divide into equal spaces, as shown by 1′, 2′ and 3′. In practice more spaces should be employed. At right angles to N 1′ and from 2′ draw a line intersecting N 1′ at *a*. From *a* draw a line to the apex P, intersecting D G of the pot at *b*, and O L of the top of the spout at *e*. Now at right angles to the center line P *a* and from the intersections at the bottom of the spout M *b* N, and at the top at L *e* O (which represent respectively points of intersections obtained from 1′, 2′, 3′ in the semicircle), draw lines intersecting O N of the spout at 1, 2, 3, at the top and bottom of the spout respectively. Now, using P as center and radius equal to P N, describe the arc N S. At any point, as R, draw the line R P. Starting at the point R set off twice the amount of spaces contained in the semicircle 1′ 2′ 3′, as shown by 3 1 3 on R S. From the points 3, 2, 1, 2, 3 on R S draw lines to the apex P. With P as center and radii equal to P 3, P 2, P 1, P 1, P 2, P 3′, on O N of the spout, draw arcs intersecting radial lines of similar numbers, as shown. Trace a line through points thus obtained; then will *t u* S R be the pattern for the spout.

It will be noticed that we have not taken into consideration the fact that the spout intersects a round surface, but have assumed that it intersects a plane surface, as D G. The difference in the pattern is so slight that it will not be noticeable in practice. Had we developed the pattern according to the true geometrical



The Metal Worker

Fig. 2.—The Pattern.

rule it would present a problem of two cones of unequal diameters intersecting each other, and require a little time, while the short rule employed answers the purpose just as well where the spout is of so small a diameter.

For the pattern for the opening to be cut into the body to receive the spout proceed as follows. From the point 10, or the center in the pattern for body, draw a line toward the apex A intersecting the arc K I at 10′. Now from the intersections M *b* N between the spout and body draw lines at right angles to C B, intersecting the opposite side of the body E F at M^1 b' N^1. Then, using A as center and with radii equal to A M^1, A b' and A N^1, draw arcs intersecting the center line 10 10′ of the pattern at M^2, b'' and N^2. Through b'' at right angles to 10 10′ draw the line c^x c^x. Now, through the intersection *b* between the spout and the body and at right angles to the center line P *a*, draw the line *c* c'' intersecting the sides of the spout O N and L 1′ at *c* and c'' respectively. Now take the distance of either *b c* or *b* c'' and place it as shown in the pattern for body from b'' to c^x on either side. A line traced through the points M^2, c^x, N^2, c^x, will be the required opening.

After the body is rolled up and seamed a bead, shown at *r* and *s* in elevation, can be put in to make a neat finish. The bottom G F is seamed in the usual manner, while the cover & is a pressed cover, which can be bought ready made with hinge attached, or a flat or pitched cover can be made by hand.

A plain flat handle is shown by *d* T, which is laid out by drawing any vertical line, as U V, upon which lay off the stretchout of *d f* T of the handle. At right angles to U V draw W X and Y Z, the width respectively of the top and bottom of the handle, and draw the lines W Y and X Z. Then will W X Y Z be the pattern for the handle, to which a hem dge, as shown at W^1, should be allowed.

The grasp is shown by *d f* in elevation, and in an enlarged view by d'' f'', *j* representing the true section through *h i*. Care should be taken that the width of *j* is not more than *f* f' in the pattern for the handle. Now divide the profile *j* into an equal number of spaces, as shown by the small figures 1″ to 4″. From these points and at right angles to *h i* draw lines intersecting the curve d'' *i* f'', as shown. Extend the line *h i* as *h m*, upon which place the stretchout of *j*, as shown by points 1 to 4 to 1 on *i m*. At right angles to *i m* and through the small figures draw lines, which intersect with lines drawn from points having similar numbers in d'' *i* f'', at right angles to d'' f''. Trace a line through points thus obtained; then will *n* 1 0 1 be the pattern for the grasp. The letter *d* in elevation shows a small button which is soldered to the handle and prevents the thumb from slipping when in use.

Carnegie Sheet Steel Company.

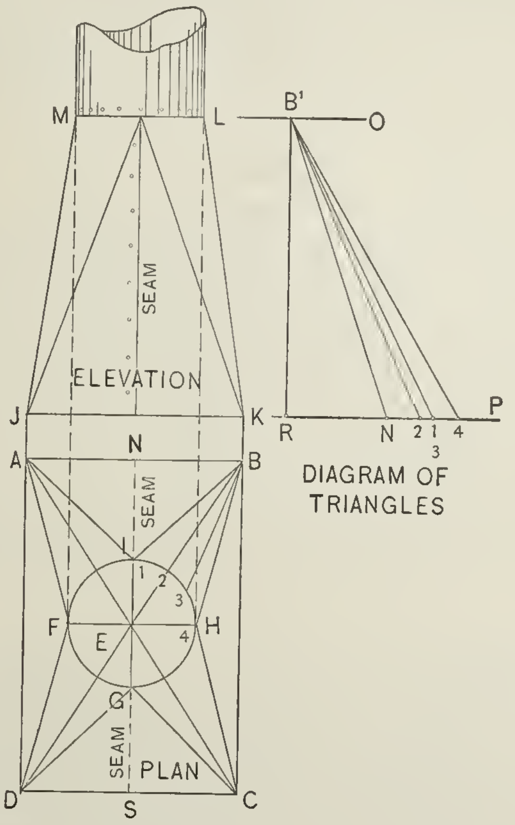
The Carnegie Sheet Steel Company of Pittsburgh will let contracts in a few days for a six-mill plant, to be erected at West Carnegie. Two basic open hearth steel furnaces, with a capacity of about 125 tons per day, will be installed. Work will be commenced on contracts at the very earliest possible time and pushed to completion as rapidly as conditions will permit. The plant will be in no way connected with the Carnegie Tube Company. The Pittsburgh Construction Company will do the grading and put in the foundations. Edward E. Erikson, consulting engineer, of Pittsburgh, has been given the contract for two 25-ton basic open hearth furnaces, and the American Bridge Company will erect the buildings.

THE stockholders of the Atlanta Rolling Mill & Tin Plate Company met in Atlanta, Ind., on Wednesday, 21st inst., and elected the following Board of Directors: J. M. Whisler, L. C. McFatridge, Henry Roads, Wm. H. Marker, H. B. Hibbin, Henderson Coppock and J. A. Mitchell. The following officers were chosen: President, J. M. Whisler; vice-president, Henry Roads; treasurer, E. S. Walton; secretary, John Kesler, and manager, Walter Jones. The company, we are advised, will be ready to do business after June 2. It is not their intention to repair, or use in any way the American Tin Plate Company's mill or building at Atlanta, but they will erect a plant that will be new in every part.

Pattern for a Two-Pieced Stack.

To develop a pattern for a two-pieced stack having a rectangular base and a round top proceed as follows:

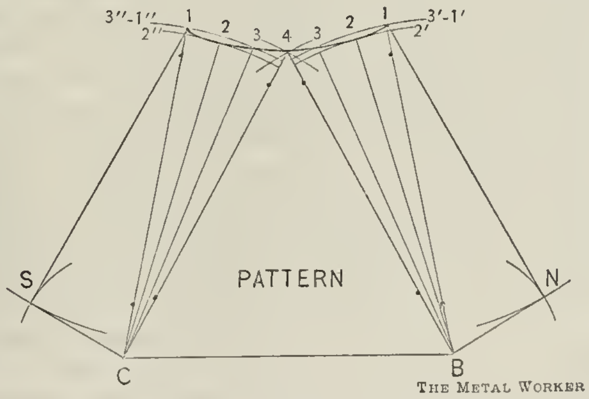
In the accompanying illustration, the chimney measures 14 x 21 inches and the stack is to taper to 6 inches.



THE METAL WORKER

Pattern for a Two-Pieced Stack.—Fig. 1.—Plan, Elevation and Diagram of Triangles.

In this connection it may be proper to remark that no matter what size the chimney has, or to what size the stack tapers, the principles hereinafter explained are applicable to any case, whether the top opening is central over the rectangular base or to one side. In Fig. 1, let A B C D represent the size of the chimney. Draw the diagonals A C and B D, intersecting each other at E. As the 6-inch pipe is to come directly in the center of the chimney use E as center, and with the required radius describe the circle F G H I. In its proper position above the plan draw the elevation J K L M; although this is not necessary in the development of the pattern, so long as the hight of the article is known.



THE METAL WORKER

Fig. 2.—The Pattern Shape.

Draw the two diameters, F H, and G I in the plan, as shown, and from F and I draw lines to the corner A; also from I and H, H and G and G and F draw lines respectively to the corners B, C and D. As the four corners are symmetrical only one corner pattern will be required. Divide the quarter circle I H into an equal number of parts, as shown by the small figures 1 to 4, from which draw lines to the apex B. Then will these lines represent the bases of triangles, whose altitudes or hights equal the hight of the stack, as shown in elevation.

To obtain these triangles proceed as follows: Extend the lines J K and M L in elevation, as shown respectively by J P and M O. At any point, as R, at right angles to K P, draw the line R B^1. Now take the various distances from B to 1, to 2, to 3, to 4 in plan, and place them on the line K P, as shown from R to 1, to 2, to 3, to 4, and from these points draw lines to the apex B^1. Then will these slant lines represent the various true lengths on similar numbered lines in the plan. Assuming that the seam will come on N I and G S in plan, then take the distance of N I or G S and place it as shown by R N in the diagram of triangles, and draw a line from N to B^1, which gives the true length on N I or G S in plan.

For the half pattern of the stack proceed as follows: Draw any horizontal line, as C B, in Fig. 2, equal to C B in plan in Fig. 1. Now with radius equal to B^1 4 in the diagram of triangles and B and C in Fig. 2 as centers describe arcs intersecting each other at 4. Draw lines from 4 to C and 4 to B. Now with radii equal to B^1 1, 3 and 2 in the diagram of triangles in Fig. 1 and with B and C in Fig. 2 as centers describe respectively the arcs 3′ 1′, 2′ and 3″ 1″, 2″, as shown. Now set the dividers equal to the spaces contained in H I in plan in Fig. 1, and starting from the point 4 in Fig. 2, step from one arc to another of similar numbers on either side, thus obtaining the points 3, 2 and 1 on both sides. Through these points trace a curved line, 1 4 1, and draw a line from 1 to C and 1 to B. Now, using 1 and 1 as centers with a radius equal to B^1 N in the diagram of triangles in Fig. 1, describe the arcs S and N in Fig. 2, which intersect by arcs struck from B and C as centers and with radius equal to N B or C S in plan in Fig. 1. In Fig. 2 draw lines from 1 to S to C, also from B to N to 1. Then will 1 4 1 N B C S be the half pattern for stack, to which laps must be allowed for seaming or riveting. When bending the stack bend on the lines in pattern in Fig. 2 shown by the dots.

Stowell Mfg. Company's Prepared Roofing.

Stowell Mfg. Company, 114-134 Culver avenue, Jersey City, N. J., manufacturers of roofing materials, have just added an entirely new covering material to their regular lines of such roofings, which will be known as Mica-Slate roofing. It consists of a single ply of high grade double thick asphalt saturated felt, the top surface of which is also covered with asphalt and a combination of mica and slate ground together, which makes an especially suitable roof covering. An important feature of it is the comparatively low price at which it is sold, which in effect is about the price of ordinary three-ply coal tar roofing felt, nails and caps being included in the price of the Mica-Slate roofing. Aside from the greater lasting qualities of asphalt treated felt, this roofing is a finished product, so that the cost of labor to coat the three-ply tarred roofing is saved as well as the material for coating the surface.

A feature of the various roofings made by this company is that nothing but genuine Trinidad asphalt is used for saturating, cementing and covering the various prepared roofings, which are put up in rolls of 108 square feet (40 feet by 32 inches), technically known as a "square," and capable of covering 100 square feet net of surface, exclusive of laps. What is claimed for asphalt saturated felt is that it remains pliant and elastic for years, does not get brittle or crack, is odorless, and will give good results for two or three times the period that coal tar products do without recoating.

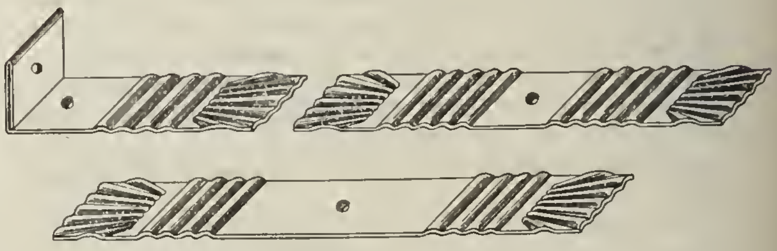
The company also make superior grades of asphalt saturated and coated ready roofings, consisting of two thickness of felt cemented with asphalt, the coverings being gravel, cork and asbestos, the several kinds having distinctive features that commend them to the trade.

In this connection they also make an asphalt saturated roofing felt, Nos. 30, 40 and 60, single ply, to be used in the same way as coal tar coated paper with which it competes. This plant makes 50,000 square feet of ready roofings of the kind described in a day's run.

In a separate factory nearby they have a paint making plant for producing absolutely pure asphalt paint, which is warranted to contain no coal tar in its composition. They particularly recommend it for painting metal roofs or covering old shingle roofs, smokestacks, iron bridges and iron or steel structural work generally. Another related product they manufacture is an elastic rubber cement, which is used by tinners for flashing and by slaters for imbedding slate in the laying of a roof. They deal in No. 1 refined Trinidad asphalt, Trinidad asphalt roofing cement and Trinidad asphalt paving cement. The roofs of the great buildings of the Fore River Ship & Engine Company, Quincy, Mass., who are building several war ships for the United States Government (among which are the battle ships "New Jersey" and "Rhode Island"), are covered with the gravel prepared roofing made by this company.

Taft's Improved Metal Wall Ties.

We present herewith illustrations of what is known as Taft's improved wall ties, now being manufactured and placed on the market by R. C. Taft, Room 5, Columbian Building, Topeka, Kan. The ties are made of galvanized iron of a gauge suitable for the purpose and are corrugated in the manner indicated in the engravings. The construction is such as to render them especially adapted for hollow or double walls as well as for brick veneer construction. The tie in the upper left hand portion of the engraving shows how the end is bent at a right angle and perforated for fastening to the frame or wooden support. The illustration shows so clearly the construction of the ties that extended description would seem to be unnecessary.



Taft's Improved Metal Wall Ties.

FLASHINGS.

The journeymen cornice makers of New York City have notified their employers that, beginning with September 1 they will expect to receive $4 per day wages and a half day off on Saturday the year round with full pay. At present they are getting $3.75 a day, with a half day off on Saturday for three months of the year without pay.

Tracy Coit died on May 23 at his home, 237 West 126th street, New York City, after a lingering illness. He was born in Connecticut 63 years ago, and in early life served in the United States navy; afterward he went into the canned goods business, and later became a dealer in Sheet Metals.

The Schratweiser Fireproof Construction Company of Brooklyn, N. Y., have been incorporated under the laws of New Jersey, with a capital of $250,000, to manufacture Fire Proof Construction Work, including Schratweiser's patent Metal Lathing. The incorporators are Jacob Schratweiser, Christian Schratweiser and John Guilfoyle, all of Brooklyn.

Henry Weyand, Waterbury, Conn., has the contract for the metal work on the new forge room at the plant of the Waterbury-Farrell Foundry & Machine Company, Waterbury, Conn.

The American Sheet Steel Company are at present adding 14 new Sheet mills to their various plants, mostly at Vandergrift, Pa. These mills will soon be in operation, and will greatly increase the company's output, especially of the heavier grades of Sheets.

It is reported that Col. George Wick has tendered his resignation as president of the Youngstown Iron Sheet & Tube Company of Youngstown, Ohio, and will sail for Europe shortly. Colonel Wick has been prominently identified with the number of the mills that are now owned by the United States Steel Corporation.

Barker & Biggart, Springfield, Mass., have the contract for putting up the Metal Ceiling in the buildings of Forbes & Wallace, in that city.

A labor-saving device for tin workers has recently been patented by Oscar Worthy and Charles Almas of Hamilton, Ontario, Canada. It is described as a combination of several of the tin working machines now in use, beaders, formers, groovers, crimpers, swadges, &c., making it possible to be used for one or more of the same without resetting. It is claimed that with it stove pipes can be completed, ready for seaming, at one passing through. One of its strong features is an attachment by means of which the action of the machine upon the material can be started or checked at will, as in the manufacturing of stove pipe it does not bend or crimp the edges of the material, thus allowing a straight edge for placing in the seamer.

The E. W. Bliss Company, Brooklyn, N. Y., are reported to have recently booked a large contract for Sheet Metal Working Machinery, which is intended to be installed in a plant now under construction in Buenos Ayres, Argentine Republic, for the manufacture of Enameled Ware.

The contract for the roofing and sheet metal work on the new smelting shop of the Ajax Metal Company, to be built at Richmond street and Frankford avenue, Philadelphia, has been awarded to John Byrd of that city.

A company are being formed at Canton, Ohio, by interests allied with the Stark Rolling Mill Company and the Carnahan Tin Plate & Steel Company for the purpose of erecting an open hearth plant to supply the Canton field. The plans call for three open hearth furnaces of 40 tons capacity each, provisions being made to double the capacity in case the demands should require it. Victor Beautner of Pittsburgh is consulting engineer.

W. B. Leeds, formerly vice-president of the American Tin Plate Company, and now president of the Chicago, Rock Island & Pacific Railroad, was operated on for appendicitis last week.

A dispatch from Anderson, Ind., reports that the local management of the American Tin Plate Company has received notice that the usual shut down in the factories will be omitted this summer. Surplus stocks are very light, and there being an active demand it becomes necessary to continue in active operation.

The National Works of the American Tin Plate Company, at Monessen, Pa., are to be very much enlarged. This has been a 12-mill plant, but is now being increased to 24 mills, two of which are in operation, making a total of 14 in all that are running. The remainder of the new mills will be started as fast as they are finished. When the entire 24 mills have been started the National Works will be one of the largest plants owned by the American Tin Plate Company. This was the only plant owned by the American Tin Plate Company that was operated continuously last summer during the strike. With the loyal men at this works much assistance was given toward the starting of other plants before the strike was broken.

The Bostwick Steel Lath Company of Niles, Ohio, have decided not to move their plant to Warren, Ohio, as contemplated, but instead have bought a site of 8 acres on the Erie Railroad, near Niles. The concern will erect new buildings and greatly increase their output of steel lathing.

The Gateway City Steel Tank & Roofing Company, La Crosse, Wis., manufacturers of Galvanized Steel Tanks, Bathtubs, Pails, Roofing, Siding, &c., are installing a new plant, and though they have purchased most of the required machinery, they will shortly be in the market for a stamping machine for the manufacture of Ceiling, Corrugated Iron Siding, &c., and considerable other machinery, as well as a 10 horse-power motor, shafting, &c. They advise us that they would like to purchase, if possible, a Conductor Pipe and Eaves Trough Machine.

The Australian Government has made some changes in the tariff law. Among these is the reimposition of a duty of 15 shillings per ton on Plain and Corrugated Galvanized Iron. The Government's original proposal was a duty of 15 shillings per ton on Plain and 30 shillings on Corrugated, but it was then decided in committee to free list both. Now a 15 shillings duty goes on in the interests of the local industry.

The British Tin Plate Trade.

Our London correspondent reports as follows on the tin plate trade of the United Kingdom: The tin plate trade is still doing remarkably well, all the mills being fully occupied, and orders in hand are calculated to keep things going till the end of June. In some cases delivery cannot be expected until August. Buyers of tin plates are, however, at the moment fairly well stocked, and as long as the American market continues brisk they do not fear for the near future. At the same time there is a feeling over here of distrust in regard to the markets of the United States, which two or three nasty smashes on the New York Exchange do not tend to reassure.

Lyon, Conklin & Co.'s Catalogue.

Having recently added a new department to their business—that of manufacturing eave trough, conductor pipe, and stove and heater pipe—Lyon, Conklin & Co., Baltimore, Md., have issued a new catalogue, a neat publication of 28 pages, covering the goods named as well as other lines of roofing materials handled by the concern. The firm of Lyon, Conklin & Co. are well known to the roofing trade in the South, having been established in the city of Baltimore for upward of 40 years. In an introductory note to the present catalogue, the concern state that they have installed machinery of the latest design, with all modern improvements, to enable them to produce sheet iron eave trough and pipe in perfect forms and shapes. They call particular attention to the fact that their plain, round conductor pipe is perfectly round, having no flat side as is the case with many other makes. Among the goods illustrated and described in the catalogue are the L. C. & Co. patent roofing seamer, which is well known to the trade. This is followed by Monumental galvanized eave trough, with lap or slip joint and full round bead, Monumental galvanized round conductor pipe, made either corrugated or plain, also eave trough miters and end pieces. Other goods included in the catalogue, which are handled by the concern and constantly kept in stock, are adjustable elbows, flat crimped elbows and shoes, ridge roll, corrugated iron roofing and siding, black, galvanized and painted, and black and galvanized steel roofing furnished in rolls, each containing one square.

The latter portion of the catalogue is devoted to miscellaneous roofing supplies, including rain water cut offs, eave trough hangers, conductor hooks and fasteners, conductor strainers, roofing felt, roofing nails, metallic roofing paint and roofers' cement, extension ladders and the Sampson sectional ladder, also the Nash, Monarch and Globe ventilators. The last two pages are occupied by a list of some of the other goods made or handled by the concern, including aluminum-coated sheet metal stove and furnace pipe, galvanized and black sheet iron, zinc, wire solder, tinners' machines and tools, hot air registers and ventilators and tin and stove dealers' supplies generally. The company call special attention to their guaranteed brands of roofing plates and roofing tin in rolls which they carry in all grades.

Summer School for Artisans.

The Summer School for Apprentices and Artisans, conducted under the auspices of the College of Engineering of the University of Wisconsin, at Madison, Wis., opens its second annual session on June 30, to continue until August 8. This useful institution, the work of which was described in our columns a year ago, is designed primarily for the benefit of machinists, carpenters and sheet metal workers, engineers, shop foremen and superintendents, superintendents of water works, electric light plans, factories and large office and store buildings in cities and young men who wish to qualify themselves for such positions. For these employments a full four years' course of engineering is not needed; yet, to satisfy the present demands upon this class of workers, it is necessary for them to obtain considerable theoretical and practical knowledge not commonly taught in the schools. During the six weeks of the season of the summer school this knowledge is sought to be instilled into the pupils. The several departments of work in the school include courses in steam engineering, applied electricity, mechanical drawing, theory of construction and of transmission of power; and shop work, including bench and machine work in wood and iron, foundry work, practice with machine tools, forge work, tool making and pattern work.

As a supplement to the home instruction provided to students by the correspondence schools, a knowledge of practical work in the laboratory and shop can be acquired at the Summer School for Artisans, which will be particularly helpful. All of the shop and laboratory equipment and other advantages of the College of Engineering of the University of Wisconsin are placed at the disposal of the pupils of the summer school. The tuition fee for the term is $15, and board and lodging can be secured for $4 per week and upward. The school was started last summer as an experiment, and proved eminently successful. This school, it is explained, is not self supporting, as the fees received pay but a small portion of the expenses. The remainder is paid out of the general university funds. The attention of young men who would be benefited by the instruction provided at this valuable institution is called to the peculiar advantages offered by it, and they are invited to communicate with Prof. J. B. Johnson, Dean of the College of Engineering, Madison, Wis., for further information in regard to the school.

TRADE NOTES.

The Hoyt Metal Company, St. Louis, Mo., have been operating their Sheet Lead manufacturing department lately day and night, in order to keep up with the demands of their customers. The company's foundry has also been crowded with work and is considerably behind with its orders.

The Metile Construction Company is the title of a concern recently incorporated at Syracuse, N. Y., by John J. Cummins, Edward K. Butler and certain New York capitalists, to manufacture a material known as Metile, and designed to be used as a substitute for tiling and marble. The composition is said to be the discovery of a German chemist and it is now being manufactured largely in Germany. The American rights have been secured and the company will erect a factory for the production of this material in Philadelphia.

The Foundrymen's Association have filed an application for a charter in Reading, Pa. The object of the association, as stated in the application, is to "encourage and protect the interests of foundry operators, promote harmony and encourage uniform customs among foundrymen." The Board of Trustees, who will manage the affairs of the association, consists of Peter D. Wanner, Charles S. Prizer and John E. Harbster of Reading. The other incorporators are Howard Evans, Josiah Thompson, Antonio C. Pessano, Thomas I. Rankin, W. P. Brown, Alfred L. Belfield, Thomas Devlin and Oregon J. Ward, all of Philadelphia; Richard C. Oliphant, Trenton, N. J.; James J. Stirling, Washington, D. C., and T. B. Harkins, Bristol.

The Markle Lead Works have sent out a notice to the effect that all mail intended for them should be addressed to 718-720 Rialto Building, St. Louis, Mo. The company's general headquarters are at Granite City, Ill., where their factory is located.

The Baltimore Rolling Mill Company have purchased a large piece of land in the eastern limits of the city of Baltimore, Md., and will erect thereon a mill for the production of Bar Iron and other finished products. The officials of the company are: Harry Wehr, president; Charles G. Phillips, vice-president, and J. W. Bonley, secretary. Mr. Wehr is a member of the firm of H. Wehr & Co. of Baltimore, dealers in iron and steel, and Mr. Phillips has been connected for a number of years with the Diamond State Steel Company of Wilmington, Del. The property purchased by the company is favorably located near the water front and will possess exceptional facilities for the receipt and shipment of the raw material and finished products.

The Cardiff-Peachbottom Slate Mfg. Company of Cardiff, Md., have been incorporated with a capital stock of $25,000, by Nelson A. Heap, William D. Waltz, Griffith Griffiths, John Parry and others, for the development of Slate quarries and to manufacture Roofing Slates.

We are advised by the Pittsburgh Reduction Company that they will erect a new plant at Massena, N. Y. It has not been fully determined just what size the initial plant will be, but it will ultimately be of sufficient capacity to utilize 50,000 electrical horse-power. Plans are now being prepared. It is also intended to ultimately erect a building for turning out finished articles made of Aluminum. The power for the plant is to be supplied by the St. Lawrence Power Company, who have just finished their mammoth hydraulic electric plant at Massena.

The Northwestern Metal Company, Milwaukee, have been organized with a capital stock of $2500. The incorporators are Peter Cassel, J. P. Cassel, Jr., and John B. Wendell.

The Energy Elevator Company, Philadelphia, Pa., who were established in 1887, have been incorporated with a capital stock of $25,000. The officers of the new company are: John A. Currie, president; Samuel H. Garrett, secretary, and Adolph G. Wuest, treasurer. The manufacture of Elevators, Dumb Waiters and Hoists will be continued.

The I-XL & Goshen Pump Company, Goshen, Ind., manufacturers of Window Screens and Screen Doors, Wood and Chain Pumps, Kitchen Furniture, Ladders, Lawn Swings, &c., have just broken ground for a new brick finishing room, 48 x 222 feet, two stories and basement. They expect the building completed by August 1.

The D. M. Steward Mfg. Company, Chattanooga, Tenn., state that they are crowded with orders for their Metal Workers' Crayons and Slate Pencils, more particularly from foreign countries and especially England, France and Australia. Among large contracts they have entered into is one to supply the London, England, city schools with pencils. Export business in their other lines, including Lava Electric Insulators, Gas Burners for acetylene and coal gas, is growing rapidly. The company are putting on the market a new preparation, called Stainoff, for removing machinery paints and oils from the hands.

It is announced on good authority that the New Jersey Zinc Company have purchased the Prime Western Spelter Company and the plant of A. B. Cockerell, both at Iola, Kan.

The Allentown Hardware Mfg. Company, Allentown, Pa., have recently purchased the Allentown Brass Foundry, the Allentown Nickel & Brass Works and the Standard Electro Plating Works of that city. They are putting on the market Refrigerator Hardware, Bar Rails, Cash Register Parts, Door Pulls, Door Sills and Machine Plates. They are also in a position to do both light and heavy brass, bronze and aluminum casting, as well as brass, copper and nickel plating and finishing.

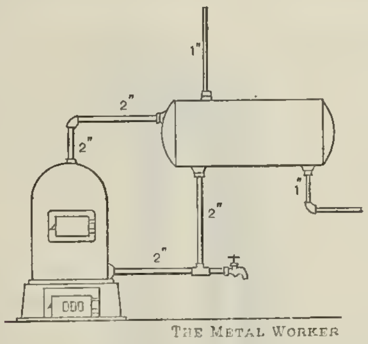
THE LETTER BOX.

Inquiries in regard to practical questions of general interest are invited, in reply to which we shall be glad to receive suggestions and information from our readers.

Correspondents are requested in all cases to give their names and addresses, which will not, however, be published or disclosed without their consent.

IS TANK HEATER CONNECTED CORRECTLY?

From C. M. J., New York City.—Having read the letter of "R. M. D." in *The Metal Worker* of May 24, I would say that the method of piping shown in the accompanying sketch overcomes some objections that might arise to the connection shown in his sketch. In my sketch there is nothing to impede the circulation, while in his sketch the hottest water might pass up the 1-inch hot service pipe and support a more or less active circulation in that pipe without circulating through the storage tank, as desired. The connection which he shows would become air bound if it was not for the 1-inch hot service being taken from the top of it. My sketch shows the flow pipe from the tank heater connected near the top of the tank and on the end. This will allow a supply of hot water to be drawn shortly after the fire is lighted, while, if it connected at the center of the tank, a much longer time would expire before hot water could be drawn. One of the advantages of the connection shown by "R. M. D." is that hot water could be drawn very soon after the fire was lit.



Is Tank Heater Connected Correctly?

HIGHT AND CAPACITY OF TANKS.

From P. J. L., Milwaukee, Wis.—Please be kind enough to give the shortest and best rule to figure out the amount in gallons a tank of a given hight and diameter will hold. Also for obtaining the hight that a tank must have to hold a given number of gallons when the diameter is given. For example, if a tank is 16 inches in diameter how high should it be made to hold 20 gallons? How many cubic inches are there in a gallon?

Answer.—In a United States gallon there are 231 cubic inches. To find the hight of the tank given in the example, divide the 20 gallons by the decimal fraction 0.0034 and divide the quotient by 16 and again by 16, when the quotient will be 23, the hight in inches which the tank must have as per example: $20 \div 0.0034 = 5882 \div 16 = 367 \div 16 = 23$ inches; hight of tank.

Another method is to multiply the 20 gallons by 231 and divide the product by 201, the area of a 16-inch circle, and the quotient will be 23 inches, the hight the tank must be, as per example: $231 \times 20 = 4620 \div 201 = 23$ inches, hight of tank. This method of figuring is a reversal of the short rule for finding the number of gallons a tank of given dimensions will hold, which is to square the diameter and multiply by the hight and then by 0.0034, as per example: $16 \times 16 = 256 \times 23 = 5888 \times 0.0034 = 20$ gallons. The decimal fraction 0.0034 is obtained by dividing 0.7854 by 231, the number of cubic inches in a gallon. If 0.0034 was not used the process would be $16 \times 16 = 256 \times 0.7854 = 201$. Then $20 \times 231 = 4620 \div 201 = 23$ inches. Or, $201 \times 23 = 4623 \div 231 = 20$ gallons.

FORMULAS FOR GAUGE OF METAL ON GALVANIZED STEEL TANKS.

From D. C., Gainesville, Texas.—I build steel tanks and am bothered to know how large a tank I can build out of a certain heft of galvanized steel. For instance, I desire to know the very largest tank for water that can be built of No. 16 gauge steel and be perfectly safe; also of any other gauge of steel. This information I greatly need and cannot get it here. Any assistance you can give will be highly appreciated.

Answer.—In *The Metal Worker* of May 17 was presented some information that bears on this subject. In addition, we reprint the following from *The Metal Worker* of October 12, 1901: There are no direct formulas for thickness of iron for tanks. The conditions in regard to pressure are variable with the requirement for wear and the methods of riveting, and also the added strength due to galvanizing on the seams. As a general rule, a factor of safety of six times the strength of the longitudinal seam should be allowed, and for riveted and galvanized seams a factor of safety of four times the strength of the iron should be allowed. Then, as galvanized plate iron is equal to a breaking strain of about 40,000 pounds per square inch, its factor of safety will be 10,000 pounds. For cylindrical tanks to be limited to 100 pounds pressure and 16 inch diameter, we have one-half the diameter for the multiplier of the pressure, or $100 \times 8 = \frac{800}{10{,}000} = 0.08$ inch, or No. 12 by the American gauge. Hot water tanks of the trade are made somewhat thicker than this for convenience of making connections and for wear. Books on boiler making give the method for computing strains and the bracing for other forms, which should be the same for tanks.

ROOFING OVER OLD ROOFS.

From B. McK., Augusta, Ky.—Replying to the inquiry of "G. A. H.," I would say, from my experience, covering 15 years in metal roofing, as regards the laying of roofing over old roofs, and as to which is the better, "to tear off the old shingles" or "cover over them," that these questions must be determined by the good judgment of the roofer after an examination of the old roof and consideration of the style of roofing to be put on. If, on examination, the shingles are found to lay flat, smooth and close to the sheathing, and the style of roofing to be put on is V crimped, I should decide very quickly to lay the new roof over the old, using eight-penny wire nails, and driving them straight down through the center of the crimp, making sure that they will enter the sheathing boards. The advantage thus gained to the roofer is the saving of time and labor; to the owner of the house, or occupant, a relief from the heat and noise and to the roof itself, of having a solid underlying surface. In my opinion such a roof will last longer, give better satisfaction and call for less attention than any other manner of application. But should the old shingles be found curled up on the ends, loose and presenting a rough and uneven surface and the style of roofing be any other than the V crimped, I would not be long in deciding that the shingles should be taken off, all nails pounded down, new sheathing put in where needed and good heavy felt paper laid under the new roof. This is always a reliable mode of application. But, answering the question of which is the better plan, I do not hesitate to say that, with proper judgment and care taken, I pin my faith to the first manner of application—that of covering over the old roof.

GUARANTEE SHOULD NOT BE GIVEN.

From A. J., New York.—I should be pleased if you would present the following item in the Letter Box, for the purpose of securing the opinion of the roofing craft concerning it: I recently repaired the leader box and also the worst spots on a tin roof, but told the agent of the building to put on tar and paper, as a further means of making the roof tight, as some of the seams of the roof were leaking. He wanted to economize and told me to fix the roof the best way I could without tar. The whole job, with repairs and two coats of paint, amounted to $23. After having the bill a few weeks in his hands, the agent wrote me that he will pay it provided I give him a year's guarantee.

BATH FOR DIPPING BRASS.

From A. B. F., Brooklyn.—Will you please describe in *The Metal Worker* the bath used for dipping brass and the proportions required?

Answer.—A variety of baths are used for dipping brass, and it depends on the color or finish desired as to which is the best. That most frequently used is composed of sulphuric acid and water, in the proportion of 1 part of the acid to 15 or 20 parts of water; or hydrochloric acid may be substituted for the sulphuric acid. If the articles are to have a bright finish they are first dipped in the diluted sulphuric acid to remove the tarnish, then into a mixture composed of 100 parts, by weight, of nitric acid; 50 parts of sulphuric acid, 1 part of soot and 1 part of common salt. As soon as the articles show a bright appearance they are quickly rinsed in a large quantity of water that must be frequently changed. After washing with the cold water, they should again be rinsed in hot water so that they will dry quickly. Several recipes for these baths are given in "The Metal Worker Handy Book," which can be supplied by our Book Department.

PROTECTION FROM BREATHING ACID FUMES.

From Y. Z., Bridgeton, N. J.--I have noticed the inquiry of "X." in *The Metal Worker* of May 17, and would suggest that if he wears a fine sponge that has been dampened under his nose he will escape much of the annoyance that arises from soldering with strong acids.

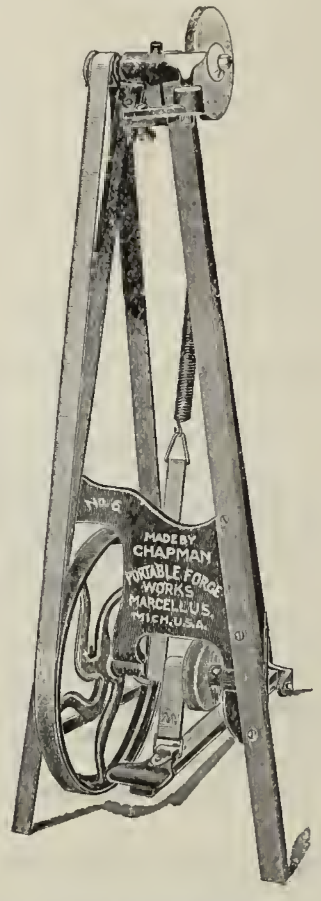
Exhibit of Alcohol Appliances in Peru.

United States Vice-Consul J. C. Cree of Callao, Peru, reports that an international exposition of the appliances of alcohol will be held in Lima, Peru, from November 1 to 30 of this year. The exposition will include appliances wherein alcohol is used for motive power, heating apparatus, lighting and other purposes. Prizes will be awarded, consisting of gold, silver and copper medals. Space for exhibits will be given free, as well as the necessary lighting and water, and the committee in charge will, when requested, attend to the installation of exhibits free of expense. In order to insure the admission of the exhibits, obtain concessions, reduction in freight rates, &c., communications should be addressed to the secretary of the executive committee, containing the name and address of the exhibitor, the nature and use of the articles to be exhibited, and the superficial area in meters required. Exhibits must be entered, at the latest, before the end of September. In the division of heating apparatus using alcohol are placed heaters for general use, railway cars, coaches, calefactors, stoves and other apparatus; in the division of lighting; lamps or apparatus of the incandescent system for public use operated by means of methylated or neutralized alcohol; lamps using carburized alcohol, and lamps or apparatus of the incandescent system for domestic use. All utensils and apparatus making use of neutralized, methylated, carburized or solidified alcohol will be subjects for exhibits. Foreign exhibits are particularly solicited.

According to the *Journal of the Franklin Institute* an artesian well in Grenelle, France, took ten years of continuous work before water was struck at a depth of 1780 feet. At 1259 feet over 200 feet of the boring rod broke and fell into the well, and it was 15 months before it was recovered. A flow of 900,000 gallons per day is obtained from it, the bore being 8 inches. At Passy, France, there is another artesian well 1913 feet in depth and 27½ inches in diameter, which discharges an uninterrupted supply of 5,500,000 gallons per day; it cost $200,000. An artesian well at Butte-aux-Cailles, France, is 2900 feet in depth and 47 inches diameter. These are all surpassed by an artesian well in Australia, which is 5000 feet in depth.

Chapman's Grinding Machine No. 6.

The Chapman Portable Forge Works, Marcellus, Mich., are putting on the market the grinder herewith illustrated. The point is made that it stands alone, not having to be bolted to the wall or floor. The floor space occupied is 18 x 22 inches; the hight from the floor to the center of the spindles 41½ inches; weight 67 pounds, with one emery wheel, ¾ x 6 inches. The two front uprights are angle steel, the back upright channel steel and the side braces band steel. The front brace, or name plate, is of cast iron, well ribbed, with large babbitted bearings for the main shaft, which carries the cluch and fly wheel. The treadle rod is of hard wood, attached to the back upright by a hinge, and has a cast iron treadle plate, to which is attached the strap for driving the clutch. The coiled spring, also attached to the rear upright and to the clutch by a second strap, rewinds the clutch and raises the treadle. The top end of the uprights is bolted to a solid cast iron head piece which has a projection on the front, to which the tool rest socket is attached by means of a bolt and wing nut. The spindle runs in a two-part adjustable babbitted bearing 4½ inches long, which is bolted to the head casting in such a manner that it can be easily adjusted to line with the fly wheel, so that the belt will run properly. The head bearing has an oil hole, which is covered with a brass cap to keep out dust. The fly wheel is large enough, it is stated, to give 2000 revolutions per minute as an easy motion, while double that speed may be attained. It is explained that the machine will grind and polish machine parts of steel, wrought and cast iron or brass; that it will sharpen plane bits, chisels, drills, cold chisels, knives, shears, skates, &c., and that the grinder is especially adapted to carriage makers, blacksmith and bicycle repair shops and marble and granite cutters, as well as many uses in connection with mills, mines, farms and ranches.



Chapman's Grinding Machine No. 6.

The Oshawa Steam & Gas Fitting Company have been incorporated, at Oshawa, Ontario, with a capital of $50,000, by W. F. Cowan, J. D. Storie and H. T. Earswell.

TRADE REPORT.

MARKET SUMMARY.

Pig Tin is quiet and a shade higher.

Copper has fluctuated, but remains at about former price; demand is quiet.

Pig Lead is quiet and firm.

Spelter is scarce and considerably higher.

Antimony is unchanged.

Nickel is in good demand, and without change in price.

Aluminum is firm and in good demand.

Tin Plates are quiet, with prices unchanged.

Black Sheets are firm; demand is rather lighter.

Galvanized Sheets are not in such heavy demand, but are firm.

Old Metals are rather quiet but without change.

Foundry Iron is becoming still more scarce, with prices mounting upward.

Sheet Copper is in good demand, with prices firm.

Sheet Zinc is without change.

Hardware is moving in good volume and prices remain strong.

Plumbers' Supplies are in good demand, with prices in general strong.

Plumbers' Earthen Ware is likely to advance.

Wrought Iron Pipe prices in New York have been readjusted.

Bare Copper Wire prices are somewhat irregular, owing to break up of the association.

Raw Washers are higher in price and strong.

Wire Cloth is scarce and very firm.

Garden Goods are in heavy demand and prices firm.

Oil and Gas Stoves are moving freely at strong prices.

Wire Nails are active and firm.

Cut Nails are in good demand with prices unchanged.

Window Glass is dull and no higher in price.

Linseed Oil is firm and unchanged.

Spirits Turpentine has advanced about ¼c. per gallon.

METAL MARKET.

New York, May 31, 1902.

Pig Tin.—A quiet market prevailed here throughout the entire week. The fluctuations were very slight, and values held about the same position as a week ago. Business has been on a very moderate scale. At the close the market was firm, retail prices ruling from ⅛c. to ¼c. higher than those given in our last report. Straits Pig in small lots is quoted at 31¼c. to 32c. per lb., according to quantity. Arrivals thus far this month have been rather light, amounting to about 2647 tons.

Copper.—The manipulation of this metal continues in the hands of the interests concerned in the flotation of the new company, as referred to in our report last week. Early in the week the market advanced materially, but a reaction took place on Wednesday bringing renewed weakness and lower prices. The consumptive demand also slackened with the weakening tendency on prices. Jobbers' prices remain at about the level of a week ago—viz., 13c. to 13¼c. per lb. for Lake Ingot in small lots, and 12¾c. to 13c. for Casting Copper. Exports during the week were somewhat better than expected, bringing the total for the month thus far up to 1300 tons.

Sheet Copper.—The demand for Sheet Copper continues active, and prices remain firm on the basis of 18c. per lb. for Sheet Copper from store.

Pig Lead.—The market for Pig Lead is without change. Demand is moderate, and prices remain steady at the figures ruling for some time past. American Pig in small lots is quoted at 4.45c. to 4½c. per lb. St. Louis advices report conditions in Pig Lead at that center to remain very much as they have been, a very light run of transactions having marked the week under review.

Spelter.—Scarcity of spot metal is the leading feature of the market for Spelter. This fact has imparted great stiffness to prices which have advanced sharply during the week, ruling about ½c. higher than those of a week ago. Good Western brands in small lots are now quoted at about 5¼c. to 5½c. per lb. The demand is of fair proportions, but consumers this week appear to have been discouraged in purchasing by the sharp advance in the metal. St. Louis advices report that labor troubles have seriously hampered smelting plants, and have practically brought the activity in the market for Spelter to a halt. No general buying is noted, and what few sales are being made are for urgent requirements, a considerable premium being exacted. Owing to the short supply satisfactory quotations are hard to arrive at.

Sheet Zinc.—The demand for Sheet Zinc is of the usual proportions and prices are firmly maintained at 6¼c. per lb. for 600-lb. cask lots and 6¾c. to 7c. for smaller quantities.

Antimony—Is unchanged. Hallett's in small parcels is quoted at 8⅝c. to 8¾c. per lb.; U. S. at 8⅜c. to 8½c., and Cookson's at 10¼c. to 10¾c.

Nickel.—There is no change in the market for this metal. Small lots are quoted at about 55c. per lb.

Aluminum.—The demand continues active, and prices are without change. Small lots of No. 1 Ingot guaranteed 99 per cent. pure are quoted at 37c. per lb., and 100-lb. lots at 35c.

Tin Plates.—There is nothing new or interesting to be recorded in this department. The demand is of very moderate proportions and prices remain unchanged and firm. American Bessemer Coke Plates, I C, 14 x 20, in moderate sized lots, delivered at New York and corresponding points, are quoted at about $4.75 to $4.90 per box. Deliveries on former contracts continue on a liberal scale.

Sheets.—The demand for Sheets is not as active as it was some time ago, but mills are pretty comfortably filled with orders for the next three months. It is understood that two or three of the mills of the American Sheet Steel Company will be closed soon for extensive repairs and improvements. Meanwhile, the mills are making full time and are succeeding in getting more nearly abreast of their contracts, which will enable them to better cope with the rush of business that is expected later on. Galvanized Sheets are relatively rather quiet, but the mills making this class of material are pretty well filled up on old contracts. Jobbers' prices remain firm and without change. No. 27. One Pass, Cold Rolled Soft Steel Sheets are selling at about 3.75c. to 3.80c., and No. 24, Galvanized, at 4c. to 4.20c.

Chicago advices are as follows: There has continued to be considerable animation, and the market has remained firm with full prices. Small lots of No. 27 Black Sheets from store are quoted at 3.45c. to 3.55c. Galvanized Sheets are quoted at net prices, small lots from store being held at 4.70c. to 4.75c. for No. 27.

Old Metals.—The demand for Old Metals of all kinds is fair and prices remain pretty steady. Dealers are paying about the following rates for moderate sized lots, delivered at New York or corresponding points:

Heavy Copper	per lb. 10¼c.
Light and Tinned Copper	per lb. 9¼c.
Heavy Brass	per lb. 8¼c.
Light Brass	per lb. 6½c.
Lead	per lb. 3⅝c.
Tea Lead	per lb. 3¼c.
Zinc	per lb. 2⅞c.
Pure Aluminum Sheet	per lb. 22 c.
Cast Aluminum	per lb. 17 c.
No. 1 Pewter	per lb. 18 c.
No. 2 Pewter	per lb. 9 c.
Tin Plate Scrap, per gross ton	.... to $5.00
Wrought Iron Scrap, per gross ton	$13.00 to 13.50
Heavy Cast Scrap, per gross ton	12.00 to 12.50
Stove Plate Scrap, per gross ton	8.50 to 9.00
Burnt Iron, per gross ton	7.00 to 7.25

THE PIG IRON MARKET.

New York.—A sharp demand exists for prompt delivery, because of delayed shipments from furnaces whose output has been cut down by the scarcity of fuel owing to the miners' strike. Practically nothing is available for such delivery, and therefore in spite of an active inquiry the market is quiet. Consumers are not placing orders to any extent for delivery late in the year, as they are hopeful that when they need Iron they will be able to secure it from Southern furnaces if not from Northern makers. Considerable Iron can be obtained from Southern furnace companies for delivery during the last quarter of the year. Prices are very firm, with an upward tendency, because of the sharp demand for early delivery. Quotations for summer delivery are as follows: Northern Iron, at tidewater, No. 1 X, $21.50 to $22; No. 2 X, $20.50 to $20.65; No. 2 Plain, $20 to $20.65. Tennessee and Alabama brands are quoted as follows: No. 1 Foundry, $20.50 to $21; No. 2 Foundry, $19.25 to $19.75; No. 3 Foundry, $18.25 to $18.50.

Chicago.—Stove foundries, Pipe works, machine shops, special foundries and general merchant foundries have been among the buyers in the local Pig Iron market during the week. The character of the trade has changed but little. It is well known that the principal large consumers have pretty well covered their wants for the balance of the current year, but in exceptional instances larger melters have only partially provided for their needs. Others who have ample Iron bought suddenly find themselves forced into the market to meet unexpected emergencies. The bulk of the business has been in small amounts ranging from one car to 500 tons. Prices of Northern Iron are without essential change—that is, for long delivery—but the Iron available for prompt shipment continues to command considerable premium. At the close Southern Iron is being held at 50c. to $1 per ton higher than the prices current a week ago, sales having been made early in the week on the basis of $16, Birmingham, for No. 2 Foundry, but subsequently contracts were booked at $16.50, and at close $17 is generally asked, while moderate amounts for immediate shipment have been sold on the basis of $17.50 to $18 for No. 2 Foundry, Birmingham. We quote as follows:

Lake Superior Charcoal	$23.00 to $24.00
Local Coke Foundry, No. 1	22.00 to 22.50
Local Coke Foundry, No. 2	21.00 to 21.50
Local Coke Foundry, No. 3	20.50 to 21.00
Local Scotch, No. 1	22.00 to 23.00
Ohio Strong Softeners, No. 1	24.00 to 24.50
Southern Silvery, according to Silicon	20.40 to 20.90
Southern Coke, No. 1	20.65 to 21.15
Southern Coke, No. 2	19.65 to 20.65
Southern Coke, No. 3	19.15 to 19.65
Southern Coke, No. 1 Soft	20.65 to 21.15
Southern Coke, No. 2 Soft	19.65 to 20.65

Philadelphia.—Iron is getting scarcer, and in view of the strike in the Anthracite Coal regions and the extreme difficulty in securing Coke, it is hard to find any satisfactory reason for expecting easier conditions in the near future. Some of the local furnaces will probably have to be banked for want of fuel. With so many uncertainties surrounding the situation it would be useless to attempt any forecast in regard to the future, as everything depends upon influences which are as yet in embryo. The most trustworthy sources of supply, however, during the next few weeks will probably prove to be in foreign markets, prices there being about on a parity with our own, freight and duty paid. American brands for delivery during the last four months of the year are about as follows, with earlier deliveries at anywhere from $1 to $1.50 more money:

No. 1 X Foundry	$20.50 to $21.50
No. 2 X Foundry	19.75 to 20.50
No. 2 Plain	19.50 to 20.00

Pittsburgh.—Report has it that the United States Steel Corporation are negotiating for the purchase of 100,000 tons of Bessemer Iron for next year's delivery. If this deal goes through it is claimed that practically the surplus output of Pig Iron in the two Valleys will be under contract up to April of next year. It is not a question of price in the Pig Iron market any longer, but where to get the Iron. No. 2 Foundry brings $20.50 to $21 and higher in this market.

Cincinnati.—The last week developed quite a little trade in Southern Pig Iron. Buyers who had been holding off for various reasons and making effort to bear the market or have selling conditions modified appear to have given up their contentions and cleaned up nearly all the offerings in sight. Once again it is being said that there is no more Pig Iron to offer for delivery prior to next October. And for the last quarter, too, there seems to be a general opinion that the available unsold supply will prove to be a scanty one. The generally accepted price for forward delivery is still on the basis of $16, Birmingham, for No. 2 Foundry. For prompt shipment, usually in small lots, the standard varies up to $17, same basis. Generally speaking, the market is unchanged, with the surface indications rather in favor of those who prophesy a very still price-list next fall. We quote, f.o.b. Cincinnati, as follows:

Southern Coke, No. 1	$19.25 to $19.75
Southern Coke, No. 2	18.75 to 19.25
Southern Coke, No. 3	18.25 to 18.75
Southern Coke, No. 4	17.75 to 18.75
Southern Coke, No. 1 Soft	19.25 to 19.75
Southern Coke, No. 2 Soft	18.75 to 19.25
Ohio Silvery, No. 1	21.85 to 22.35
Ohio Silvery, No. 2	21.35 to 21.85
Lake Superior Coke, No. 1	22.35 to 23.10
Lake Superior Coke, No. 2	21.85 to 22.35
Lake Superior Coke, No. 3	21.35 to 21.85

St. Louis.—Little variation is to be noticed in the condition governing the Pig Iron situation at this point, and while sales are not running in heavy volume, yet considerable inquiry and demand for the last half is in evidence. The major part of the orders are now being executed on a basis of $16, Birmingham, for No. 2 Foundry, but we do hear of some sales at a 25c. and 50c. higher rate. However, these sales are hardly of sufficient importance and volume to be of much influence on the mind of the buyer. The following is a range of prices current for cash, f.o.b. St. Louis:

Southern, No. 1 Foundry	$20.00 to $20.25
Southern, No. 2 Foundry	19.25 to 19.50
Southern, No. 3 Foundry	18.75 to 19.00
Southern, No. 4 Foundry	18.25 to 18.50
No. 1 Soft	19.75 to 20.00
No. 2 Soft	19.25 to 19.50

THE HARDWARE TRADE.

With the closing days of the month the trade, while continuing in large volume, is feeling the effect of the near approach of the summer. The influence of the changing season is observed not only in the somewhat diminished activity, but in the different classes of goods called for, as summer goods are in especial demand. Manufacturers with few exceptions are busy on orders and most of them are subjected to urgent requests from merchants for prompt shipments. The jobbing trade very generally report an active business, as goods sell readily in fair but not often in speculative quantities. Season goods are generally in limited supply, and there is more or less scarcity in several lines. Manufacturers of many staple goods in both Shelf and Heavy Hardware are seriously behind their orders as a result of the almost unprecedented activity of the past few months. Since the abandonment of the consolidation scheme the houses who contemplated such giving up of their identity, and consequently were not so aggressive as usual in entering the market, have been placing orders, and their business makes a perceptible addition to the current volume. There is a disposition on the part of the lareg trade to place orders for fall requirements at an early date, apprehending that if nothing occurs to disturb the present activity it may be a difficult matter to get goods as promptly as the trade will require. Enterprising jobbers, and this term describes practically all the houses who have an important position in the market, recognize the obligation to have well assorted stocks from which their customers can draw, even if in order to secure them it be necessary to order an unusual length of time in advance. In the present state of the market the difficulty the manufacturers experience in getting raw material, together with the heavy demand for their products, makes it necessary for the larger trade to anticipate their wants more liberally than has been the case even during the years of exceptional prosperity which have characterized the trade of late. In connection with this great demand there is an earnest effort on the part of manufacturers to meet the requirements of their customers, and the factories are generally running to full capacity and in many instances are being furnished with increased facilities.

NOTES ON PRICES.

Wrought Iron Pipe.—Some jobbers in the Metropolitan district held a meeting on Tuesday afternoon, at which prices to cover sales from stock in Greater New York, Long Island and for the export trade were adopted. The new prices are as follows:

	Discount.
1/8 to 1/2 inch Black Pipe	58 %
3/4 to 12 inch Black Pipe	65 %
1/8 to 1/2 inch Galvanized Pipe	46 %
3/4 to 12 inch Galvanized Pipe	53 %
Extra Heavy Pipe, Plain Ends, Black, all sizes	50 %
Extra Heavy Pipe, Plain Ends, Galvanized, all sizes	40 %
Double Extra Heavy Pipe, Black and Galvanized, all sizes	20 %

It will be noted, in comparing these prices with the last manufacturers' quotations, that the jobbers are much more liberal in their discounts on the smaller sizes than they were a week ago. This is owing to the fact that the jobbers now have an excessive stock of the smaller sizes on hand. Greater scarcity is found in the sizes running from 3/4 to 2 inches, inclusive, and while prices quoted are a fair index of the market, still some of the jobbers are insisting upon their customers paying an extra 5 per cent. beyond these prices.

Sanitary Earthen Ware.—It is understood in the Earthen Ware trade that a recasting of the lists now in effect is under way, and that new list prices showing a higher level will soon be adopted. This, we understand, is due to the fact that the operating potters are getting from 10 to 20 per cent. more wages than they were a year ago, and it is to meet the new conditions that the manufacturing potters decided to change the list, rather than make any change in the discounts. It is likely that the new list will be adopted in the very near future.

Copper Wire.—The association of manufacturers producing bare Copper Wire for numerous purposes discontinued their organization Wednesday, May 21, after years of association, and adjourned *sine die*, with, it is thought, little probability of getting together again, at least in the near future, leaving the market an open one on this class of Wire. This action was brought about by the creeping in of new competition by outside concerns, assisted by some internal friction in the association. The price is now 13½ to 14 cents per pound. The Insulated Wire Association, making Weather Proof and Magnet Copper Wires, held a meeting Tuesday, May 27, and made approximately a reduction in price of ½ cent per pound. On Weather Proof the base is now 14½ cents. On the Magnet Wire, the reduction is ½ cent per pound from the net list.

Washers.—Several advances have of late been made in the prices of Raw Washers and the market has a decidedly firm tone. In the quotations of the manufacturers a differential of 20 cents per 100 pounds is made between the price to jobbers and retailers, and for less than keg lots of a size the following extras are regularly added:

Packages of 100 up to 200 pounds, 10 cents per 100 pounds. additional.
Packages of less than 100 pounds, 50 cents per 100 pounds additional.
Packing in 5 and 10 pound packages, ½ cent per pound net.
Packing in 1-pound packages, 1 cent per pound net.

Wire Cloth.—The scarcity in Wire Cloth to which we have before referred still continues and jobbers find it difficult to meet the requirements of their customers. Under these conditions the market is decidedly firm, and those having stocks of the goods are able to realize good profits.

Garden Goods.—The volume of business in Garden Goods, such as Lawn Mowers, Hose, Garden Tools, &c., is exceptionally heavy and considerably in excess of last year. So urgent is the call, especially for Lawn Mowers, that manufacturers are scarcely able to meet it. Prices are very firmly maintained.

Summer Goods.—The demand for seasonable goods, such as Oil and Gas Stoves, Screen Doors and Window Screens, Ice Cream Freezers, &c., is very heavy, and prices in all these lines are strong.

Wire Nails.—The local demand for Wire Nails is satisfactory, with prices well maintained. Stocks are now kept well assorted, owing to the more prompt shipments made by mills. Prices are firm. Small lots from store are quoted at $2.30 per keg.

Cut Nails.—Some improvement is noticed in shipments of Cut Nails from mill, as they are now being made more promptly. There is a moderately active demand for Cut Nails in the local market. Quotations for small lots from store are unchanged at $2.30 per keg.

Window Glass.—No change in prices was made at the meeting of the National Window Glass Jobbers' Association, held in Chicago last week, according to information received. The demand is slack, owing to the unsettled conditions of labor. Glass from store, single and double strength, is quoted at 89 per cent. discount.

Linseed Oil.—The market for Linseed Oil is firm at former prices, no advance having been made. Crushers are reported to be well sold ahead. A fair jobbing demand is noted from this and nearby points. City Raw in small lots is quoted at 67 to 67½ cents per gallon.

Spirits Turpentine.—The demand for small lots of Turpentine is light at this point. The market is firmer owing to stronger feeling at the South. Consumers here seem to have covered their wants for the near future, and are waiting for a more favorable market before purchasing. Turpentine in retail quantities is quoted at 48¼ to 48¾ cents per gallon.

American Seal Paints and Cements.

The William Connors Paint Mfg. Company, the well-known makers of American seal paints, cements, &c., Troy, N. Y., have issued some rather interesting trade literature, calling attention to their specialties. Among this is a blotting pad consisting of several sheets of variously colored paper fastened to a celluloid top or cover, carrying the name and address of the company, together with a general view of their factory and an enumeration of the specialties which they are prepared to supply. Another novelty is a cardboard match safe, embellished with a picture of a workman mixing mortar and carrying in the receptacle for matches a paper representation of a barrel which, upon lifting out, is found to have attached to it a circular setting forth the merits of the American seal mortar colors. The company state that, having recognized the need of mortar colors which should mix evenly and possess excellent lasting qualities, they have devoted much time, study and application to experimentation and the production of colors, the ingredients of which would so combine as to cause them to meet the requirements named. These mortar colors are referred to as being indorsed by leading architects and painters, and the claim is made that they are compounded from such ingredients as to render them proof against the roughest element in any climate. A series of cards which the company are distributing are designed to call attention in a unique way to the merits of the paints and cements which they manufacture. Copies of these advertising novelties will be forwarded on application to those interested in goods of this character.

Elimination of Impurities from Brass Scrap.

The Ajax Metal Company, Philadelphia, Pa., advise us that they have, after considerable experimenting under the direction of G. H. Clamer, perfected a method for the elimination of zinc, iron, manganese, aluminum and other impurities from brass scrap, making the metal practically pure, and for which Mr. Clamer has been granted patents. They propose to erect a building, 100 x 175 feet, for the purpose of refining metal under these patents, and say that they will then be able to work ores direct from the mines, copper matte and galena. It is expected that the additional plant, for which ground adjoining their present plant has been acquired, will be erected and in operation by September next.

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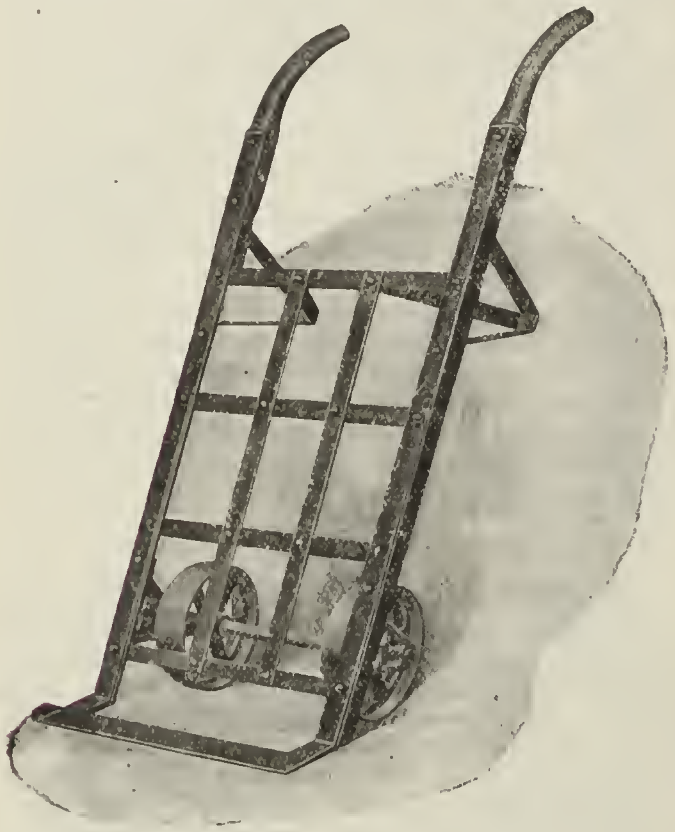
Hercules All Steel Truck.

The accompanying cut represents a line of all steel trucks offered by the Columbus Skein & Iron Works, Columbus, Ohio. The trucks are designed for railway, steamship and general warehouse purposes to replace the ordinary wooden trucks for heavy duty where the latter fail. The weight of the trucks illustrated is said to be but a trifle in excess of iron protected wooden trucks of ordinary design, and the price to the trade approximately the same. The materials used in the steel trucks are referred to as being the best, and being almost entirely of steel construction, except the hickory handle grips, are designed to withstand rough usage. The sides and cross bars are of angle steel to combine lightness with strength; the axles, dash and center straps are of steel also, the whole being riveted together to make the trucks light, strong and practically indestructible. The handles or grips, being bolted securely to the side rails, can be removed in case of accident, and replaced at a trifling cost. In addition to the style shown in the cut, of which five sizes are made, cotton and barrel trucks are manufactured.



Hercules All Steel Truck.

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A New Building Material.

"Polished Architectural Cork" is the title of a daintily printed pamphlet which is being sent out by the Nonpareil Cork Mfg. Company, Bridgeport, Conn. This material is made in blocks or sheets 36 x 9 inches in dimensions, and from them various sized squares, hexagons, diamonds, strips, &c., are cut as required. The material is referred to as being water proof, sound proof and germ proof and as being especially adapted for ceilings and side walls, floors and tiling, stair treads, wainscoting, &c. For flooring the tiling is made ½ inch thick and for wainscoting, paneling and similar decorative work the thickness is a scant ¼ inch. The company refer to the material as elastic and consequently noiseless under foot, a superior insulator against heat and cold, as free from sanitary objections and as comparatively inexpensive. The pamphlet in question presents a summary of the advantages of the Nonpareil cork for various purposes, gives a list of standard patterns and describes the method of applying and finishing. The tiling is now so made that it can be sent from the factory in the form of panels, which renders any level floor suitable for its use. On wooden floors the method is said to be similar to that of parquetry and on metal or stone water proof cement is employed.

◆

The Nickel Plate Stove Polish Company, Chicago, Ill., whose line of Stove Polishes are well known to the trade, have just perfected and placed on the market a new brand of Stove Polish, known as Black Beauty. The manufacturers have been experimenting with this Polish for some considerable period before placing it on the market, and the favor with which it is being received by the trade indicates that it is destined to prove a popular Polish. It is a high grade Polish to be sold at a reasonable price, and admirably adapted for use in polishing sample Stoves.

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ROOFING SUPPLIES, METALS, TIN PLATES, &c.

REVISED MAY 30, 1902

Aluminum—

No. 1 Aluminum (guaranteed over 99% Pure), in ingots for remelting.

Small lots	₱ ℔, 37¢
100-℔ lots	₱ ℔, 35¢

Aluminum Sheet, B. & S. gauge.
In lots of 50 ℔s or more.

Wider than	6-in.	14-in.	24-in
And including	14-in	24-in.	30-in.
	₱ ℔	₱ ℔.	₱ ℔.
Nos. 13 to 19	$0.42	$0.44	$0.47
" 20	.44	.46	.49
" 21 to 23	.46	.48	.51
" 24	.46	.50	.53
" 25	.47	.51	54
" 26	.47	.54	59
" 27	.48	.57	.62
28	.48	.57	.64
29	.49	.60	.69
" 30	.50	.64	.77

Note.—Lots of less than 50 ℔s 5¢ ₱ ℔ extra.

Antimony—

Cookson	₱ ℔. 10¼@10¾¢
Hallett's	₱ ℔. 8⅜@8¾¢
U.S.	₱ ℔ 8⅛@8½¢

Brass, Roll and Sheet...... 30%

Conductors—
Corrugated.

Round or Square.—

Galvanized ½ or more, N'st'd	70&10%
" Not Nested	70&5%
" Plain Round, ½ or more Nested	70&10%
Galvanized, Plain Round, Not Nested.	70&5%

Spiral Lock Seam Pipe—

Galvanized	60@60&10%

Spiral Riveted.

Galvanized	40%

See also *Elbows and Shoes; Eave Trough Miters; Strainers, Conductor*

Conductor Strainers—

See *Strainers, Conductor*

Copper—

Lake Ingot	13 @13½¢
Casting	12¾@13 ¢
Sheet and Bolt	18¢ ₱ ℔ basis
Cold Rolled Sheets	19¢ ₱ ℔ basis
Cold Rolled and Polished Sheets	20¢ basis
Planished Sheets	21¢ basis
Bottoms, Pits and Flats	₱ ℔ 22¢ basis

Eave Trough Galvanized

Territory.	L. C. L.
Eastern	75&10%
Central	75&7½%
Southern	70&12½%
S. Western	70&10%

Terms, 2% for cash.

Eave Trough Mitres—

Lap or Slip Joint	list, 25%

Elbows—Plain Adjustable—

Eastern List.

Tin	30%
Galvanized	30%
Perfect Elbows	40%

Stove Pipe—

Four-Piece

	4	4½	5	5½	6-inch.
No. 1.	$0.80	.85	.90	1.00	1.05 per doz.
No. 2.	.65	.70	.75	.80	.85 "
No. 3.	.60	.63	.65	.70	.80 "

Elbows and Shoes—

Galvanized	60%

Gasoline—

See *Petroleum Products.*

Iron Sheet—*Black.*

	One Pass, C. R., Soft Steel.	R. G. Cleaned.
Nos. 14 to 16	₱ ℔, 3.40	3.45¢
Nos. 18 to 21	₱ ℔, 3.50	3.55¢
Nos. 22 to 24	₱ ℔, 3.60	3.65¢
Nos. 25 and 26	₱ ℔ 3.70	3.75¢
No. 27	₱ ℔, 3.80	3.85¢
No. 28	₱ ℔, 3.90	3.95¢

Russia, Planished, &c.

Genuine Russia, according to assortment	₱ ℔ 11@14 ¢
Do. Stained	6@10½¢
Patent Planished	₱ ℔ A, 11¢; B, 10¢ net

Galvanized.

Nos. 14 and 16	₱ ℔ 3.45@3.60¢
Nos. 18 and 20	₱ ℔, 3.70@3.90¢
Nos. 22 and 24	₱ ℔, 4.00@4.20¢
No. 26	₱ ℔, 4.25@4.50¢
No. 27	₱ ℔, 4.55@4.80¢
No. 28	₱ ℔, 4.85@5.10¢
No. 30	₱ ℔, 6.00@6.30¢

No. 20 and lighter, 36 inches wide, 25¢ higher.

Lead—

American Pig		4.45@4½¢
Bar		5@5½¢
Pipe	6½¢	20% off
Tin Lined Pipe	12½¢	20% off
Block Tin Pipe	42½¢	20% off
Sheet Lead	7¼¢	20% off

Old Lead in exchange, 3¼¢ ₱ ℔

Mitres Eave Trough—

See *Eave Trough Mitres*

Nickel—

Per ℔	55@60¢

Paints, Oils &c.—
Leads—

Lead, American White, in Oil;	
Lots of 500 ℔ or over	6¼ @ 6½
Lots less than 500 ℔	6½ @ 6¾
Lead, White, in oil, 35 ℔ tin pails, add to keg price	@ ½
Lead, White, in oil, 12½ ℔ tin pails, add to keg price	@ 1
Lead, White, in oil, 1 to 5 ℔ assorted tins, add to keg price	@ 1¼
Lead, White, Dry in bbls.	5¾ @ 6
Lead, Red, bbls., ½ bbls. and kegs:	
Lots 500 ℔ or over	@ 6
Lots less than 500 ℔	@ 6½

Oils—

Linseed, City, raw	₱ gal. 67@67½¢
Linseed, City, boiled	69@69½¢
Linseed State and West'n, raw	66@66½¢

Spirits Turpentine—

In Southern bbls	48¼@48¾¢
In machine bbls	49¼@49¾¢

Putty—

In bulk	$1.25
In bladders	2.25
In cans 12 ℔ to 25 ℔	2.25
In cans 1 ℔ to 5 ℔	3.25

Petroleum Products—

In Barrels (Barrel Included)

Stove Gasoline	₱ gal. 10½@11¢
Kerosene	₱ gal. 12@13¢

Pipe Drain............40%

Pipe, Spiral—

See *Conductors*

Registers—

List Sept. 2, 1901.

Black Japanned	60&10@60&10&5%
White Japanned	60&10@60&10&5%
Nickel Plated	60&10@60&10&5%
Bronze Finishes in Imitation of Gold, Silver, Copper or Bronze	60&10@60&10&5%
Electroplated in Brass, Bronze or Copper	60&10@60&10&5%
White Porcelain	60%
Solid Brass and Bronze Metal	50%

Roofing Material—

1 Ply Tarred Paper. ₱ ton.	$31.00@32.00
2 Ply Tarred Paper ₱ roll, 108 sq. ft.	55@60¢
3 Ply Tarred Paper ₱ roll, 108 sq. ft.	80@85¢
Slater's Felt ₱ ton,	$35.00@36.00
Roofing Pitch	₱ bbl. $3.50

Rosin—

Common and Good—Strained.

Rosin, C. & D.	₱ bbl. $1.62½@$1.65
Rosin, E. & F.	₱ bbl. 1.70 @ 1.75
Rosin, G. & H	₱ bbl. 1.80 @ 1.85
Rosin, I. & K	₱ bbl. 2.10 @ 2.70
Rosin, M. & N.	₱ bbl. 3.05 @ 3.55

Shoes and Elbows—

See *Elbows and Shoes.*

Slate Roofing—

f. o. b. cars, Quarry Station.

	According to size.
Pennsylvania:	
Best Bangor, ₱ sqr.	$3.25@$5.00
No. 1 Bangor Ribbon, ₱ sqr	3.25@ 3.50
Pen Argyle, ₱ sqr.	3.25@ 4.00
Peach Bottom, ₱ sqr	5.25@ 6.10
No. 1 Chapman, ₱ sqr	3.50@ 4.95
No. 1 Penna. Black	$2.75@3.80
Unfading Washington Bangor	$2.25@4.25
Vermont:	
Sea Green, ₱ sqr	$2.00@$3.40
Purple, ₱ sqr	4.25@ 4.75
Unfading Green, ₱ sqr	3.50@ 4.50
Red, ₱ sqr	6.50@10.50
Maine:	
Brownville, Unfading Black. No. 1	$5.00@7.20

Solder—

½&½ guaranteed	20 @20½¢
No. 1	17½@19 ¢

Prices of Solder indicated by private brands vary according to composition

Soldering Fluids—

	—Per Pound.— Barrels	Smaller Q'ntitles
Concentrated Flux	4c	5c
Eureka Flux:		
Triple Strength	3c	3½c
Extra Concentrated	4½c	5c
Crystal		7c
Gedney's Fluid	2c	2c
Lennox Fluid	2c	3c
Perfection Flux	3c	3½@1c

Yager's Salts, 1 lb. bottles each, 50¢
5 lb. bottles, per lb., 45¢

Soldering Coppers—

Per ℔	20@22¢

Spelter—

Western Spelter	5¼@5½¢

Spiral Pipe—

See *Conductors.*

Stove Pipe Elbows—

See *Elbows, Stove Pipe.*

Stove Trucks—

See *Trucks, Stove.*

Strainers, Conductor—

Galvanized	50%

Tin Pigs and Bars—

Banca, pigs, ₱ ℔	31¼@32¼¢
Straits, pigs, ₱ ℔	31¼@32¼¢
Straits, in bars, ₱ ℔	32¼@33¼¢

Tin Plates, American
Charcoal Plates, Bright—

N. B.—The price of 20 x 28 sizes double the price of 14 x 20.

Calland Grade:		
IC,	14 x 20	$7.00
IX,	14 x 20	8.50
IXX,	14 x 20	9.75
IXXX,	14 x 20	11.00
IXXXX.	14 x 20	12.25
Melyn Grade:		
IC,	14 x 20	6.50
IX,	14 x 20	8.00
IXX,	14 x 20	9.25
IXXX,	14 x 20	10.50
IXXXX	14 x 20	11.75
Allaway Grade:		
IC,	14 x 20	6.00
IX,	14 x 20	7.00
IXX,	14 x 20	8.20
IXXX,	14 x 20	9.30
IXXXX.	14 x 20	10.40

Coke Plates, Bright—

Bessemer Steel, or equal to J. B. Grade, full weight	IC, 14 x 20	$4.90@5.00
" "	IX, 14 x 20	$6.00

N. B.—The reduction per box on lighter Plates than IC, 14 x 20, is as follows:

100 ℔	15¢
95 ℔	20¢
90 ℔	25¢
85 ℔	30¢

Terne Plates—

N. B.—The following prices are for IC 20 x 28, the rate for 14 x 20 being half as much. IX is usually held at $2 per box advance for 8 to 10 ℔ coating and $2.50 to $3 advance for 15 ℔ and upward.

About 40 ℔ coating	$16.00@16.50
About 30 ℔ coating	15.25@15.75
About 20 ℔ coating	13.25@13.75
About 15 ℔ coating	11.25@11.75
About 8 ℔ coating.	@10.00

Boiler Plates, American—

IXX, 14 x 26..(112 sheets)	$12.50
IXX, 14 x 28..(112 sheets)	13.50
IXX, 14 x 31..(112 sheets)	15.00

Troughs Eave—

See *Eave Trough.*

Trucks, Stove—

Improved Lock Frame, per doz	$15.00
Steel Lock Frame, per doz.	18.00
Daisy Improved pattern, ₱ doz	18.00

Tubes and Tubing—

Brazed Brass, List June 6, 1898	40%

Copper and Bronze, 3c per lb. list more than Brass.
Seamless Brass Tubes, net list Feb. 6 1899

Tin	50%
Galvanized	50%
Fittings for do	40%

Zinc—

600 ℔ casks ₱ ℔	6¼¢
Per ℔	6¾@7¢

PLUMBERS' AND STEAM FITTERS' SUPPLIES.

Boilers, Galvanized—

Standard Boilers:	
30 gal	72½%
35 and 40 gal	70%
Other sizes up to 52 gal	65%
52 gal. and above	55&5%
Extra Heavy Boilers:	
18 to 52 gal	60%
53 gal. and above	50&5%

Brass Work, Plumbers'—

List of December 7, 1896.

Compression:	
Basin Cocks	65%
Bath Cocks and Double Bath Cocks	65%
Bibs	65%
Bibs, Flanged	65%
Fuller:	
Bibs	70%
Basin Cocks, Nos. 1 to 4	70%
Bath Cocks, No. 4½	$2.40 each net
Ground Key Work:	
Finished Bibs	55&5%
Rough Bibs	70%
Rough Stop and Stop and Waste Cocks	70@70&5%
Rough Stop and Stop and Waste Cocks, Patented	65@65&5%

Miscellaneous—

Basin Clamps	60@65%
Basin Plugs	60@65%
Chain Stays.	60&5@70%

Iron Boiler Couplings:

	Lead Pipe.	Iron Pipe.
Plain Face..₱ set	$0.95	$1.05
Ground Face ₱ set	$1.00	$1.20

Sink or Bath and Wash Tray Plugs	60@65%
Soldering Nipples	70&5@75%
Soldering Unions	70&5@75%
Union Elbows, Hot Water Heating	75@75&15%

Cocks, Valves &c.—
Cocks—
Brass—

Air and Radiator Air	75@75&5%
Gas Meter and Union Meter	65@70%
Steam	65@70%

Iron—

All Iron	70@70&10%
Iron with Brass Plugs	65@70%

Valves—
Brass—

Check	65@70%
Garden Hose	65&10@70%
Gate	65@65&10%
Globe and Angle, hose outlet	65@65&10%
Globe, Angle and Cross	65&10@70&5%
Horizontal, Vertical and Angle Check	65@65&10%
Hot Water Radiator	75%
Radiator	70&10%
Safety	65%
Safety, Low Pressure	65%
Jenkins' Disc:	
Check	65%
Gate	65%
Globe, Angle and Cross	70%
Radiator	80%
Radiator, Corner	75%
Safety	65%

Iron—

Iron Body	70@70&5%
Foot	65@70%
Jenkins Bros.':	
All Iron, except Gate	40&5%
All Iron Gate	35@40%
Iron Body, except Gate	60%
Iron Body Gate	50@50&5%
Swing Check	50%

Earthenware—

Brown Glazed Wash Tubs	20%
Brown Glazed Sinks, Kitchen and Pantry	20%
Basins, Urinals and Hoppers	45%
Closet Bowls, Sundries, Washouts and Pedestals	50%

Fittings—
Brass Fittings—

Finished	70@75%
Rough	70@75%
Bushings	70@75%
Nipples	70@70&2½%
Unions, Rough and Finished	70@70&5%

Iron—

Cast Iron Fittings, Black and Galvanized, Standard sizes	65@70%
Cast Iron Bushings and Plugs	65@70%
Cast Iron Flanges	65@70%
Cast Iron Floor Flanges	65@70%
Malleable Iron Fittings (from ℔ list)	50%
" " Bushings	65@70%
" " Unions	65@70%
" " Unions, Flange	60&10@70%
" " Pipe Hangers, Universal	50%
Wrought Iron Nipples	65@70%
" " Couplings	60@65%
" " Long Screws	60@65%

Lavatories—

Porcelain Enameled Iron	30@30&10%

Oakum—

Plumbers' Oakum, 50 lb. bales, ₱ ℔	2½¢

Pipe—
Brass, Iron Pipe Size—

⅛	¼	½	¾ to 3 inch
$0.38	.34	.29	.23 ₱ ℔

Cast Iron Soil—

List Feb. 25, 1901.
2 to 6 inch inclusive.

Standard	50&5%
Extra Heavy	60&7½%
All Fittings	65&10%

7 to 15 inch.

Pipe and Fittings, Standard and Extra Heavy	50%

Wrought Iron—

List Feb. 15, 1900.

	Black.	Galv
⅛ to ½ inch	58%	46%
¾ to 12 inch	65%	53%
Extra Heavy, Plain Ends	50%	40%
Double Extra Heavy	20%	20%

Radiators—

Standard List.

Steam	50&2½%
Hot Water	50%

Sinks, Etc.— Cast Iron—

	Black.	Galv
Sinks, Square, Half Round and Corner	60@65%	60@65%
Sink Legs.	60%	60@65%
Sink Backs	60%	60@65%
Boiler Stands, Cast Iron	50@10@60%	
Cesspools, Cast Iron	50%	

Wrought Steel Sinks—

New Era, Galv'd and Enameled.	70&5%
New Era, Painted	50&10%
L. & G.	50%

Traps—

Drawn Lead Traps, List June 3, 1901	50&5%

Tubs, Bath—

List April 1, 1902.

Cast Iron Enameled Bath Tubs.	
Regular Patterns, Guaranteed	30%
All Special Patterns	15%
Solid Copper, list of Feb. 1, 1899	40%

Solid Porcelain—Class A, 30%; B, 40%; C, 50%.

Steel Clad Copper Lined, list of Feb. 1, 1899	50@55%

CLASSIFIED LIST OF ADVERTISERS.

Agate Nickel-Steel Ware.
- Lalance & Grosjean Mfg. Co., 19 Cliff St., N. Y.

Acetylene Gas Generators.
- International Heater Co., Utica, N. Y.

Agricultural Furnaces.
- Giblin & Co., Utica, N. Y.

Aluminum Coated Sheet Steel.
- Steel & Iron Aluminum Coating Co., Connellsville, Pa.

Aluminum Ingots.
- Janney, Steinmetz & Co., Phila., Pa.

Aluminum Scrap Buyers.
- Janney, Steinmetz & Co., Phila., Pa.

Aluminum Sheets.
- Janney, Steinmetz & Co., Phila., Pa.

Architectural Ornaments.
- Edwards Mfg. Co., Covington, Ky.
- Frand, Martin J. & Co., Camden, N. J.
- Friedley & Voshardt, Chicago, Ill.
- Mullins, W. H., Salem, O.

Ball Cocks
- Foster, F. W. Mfg. Co., Boston, Mass.

Bathtubs.
- Day Metallic Mfg. Co. Detroit, Mich.

Black Plates.
- American Tin Plate Co. New York.
- Taylor, N. & G. Co., Phila., Pa.

Blast Gates.
- American Blower Co., Detroit, Mich.

Blowers.
- American Blower Co., Detroit, Mich.
- Buffalo Forge Co., Buffalo, N. Y.

Boiler Handles.
- Berger Bros. Co., Phila., Pa.

Boilers
- Mueller, L. J. Furnace Co. Milwaukee, Wis.

Boilers, Range.
- Koven, L. O. & Bro., 50 Cliff St. N. Y

Brass Goods
- Jenkins Bros., 71 John St., N. Y.

CanMakers' Tools and Machines.
- Bliss, E. W. Co., Brooklyn, N. Y.
- Gordon, W. J., Phila., Pa.
- Niagara Machine & Tool Wks., Buffalo, N. Y.
- Robinson, J. M. Mfg. Co., Cincinnati, Ohio.
- Stiles & Parker Press Co., Brooklyn, N. Y
- Toledo Machine & Tool Co., Toledo, O.

Castings, Iron.
- Taylor & Boggis Foundry Co., Cleveland, O.

Ceilings, Metallic.
- Berger Mfg. Co., Canton, O.
- Canton Steel Roofing Co., Canton, O.
- Eller, J. H. & Co., Canton, O.
- Friedley & Vosbardt, Chicago, Ill.
- New York Iron Roofing & Cor. Co., Jersey City, N. J.

Cellar Drainers.
- Kemp, C. M. Mfg. Co., Baltimore, Md.

Cement Tampers.
- Kramer Bros., Dayton, O.

Coal Vases.
- Cincinnati Stamping Co. Cincinnati, Ohio.

Coils.
- National Pipe Bending Co., New Haven, Conn.

Conductor Pipe and Elbows.
- American Steel Roofing Co., Middletown, O.
- Berger Bros. Co., Philadelphia, Pa.
- Clark, Quien & Morse, Peoria, Ill.
- Lawrence-Letts Elbow Co., Ltd., Waverly, N. Y.
- McClure & Co., Pittsburgh, Pa.

Conductor Pipe Machinery.
- Canton Mch. Mfg. Co., Canton, O.

Copper, Roofing and Cornice.
- Gummey, McFarland & Co., Phila., Pa.

Cornice Machinery.
- Double Truss Cornice Brake Co., Buffalo, N. Y.
- Dreis, Andrews & Krump, Chicago, Ill.
- Keene, Geo. C. & Co., Cincinnati, O.
- Niagara Machine & Tool Works, Buffalo, N. Y.
- Ohl, Geo. A. & Co., Newark, N. J.
- Peck, Stow & Wilcox Co., 27 Murray St., New York.
- Phila. Machine Tool Co., Phila., Pa.
- Poorman Mfg. Co., Piqua, O.
- Robinson, J. M. Mfg. Co. Cincinnati, Ohio.

Cornice Work, Galvanized Iron.
- Mullins, W. H., Salem, O.

Cut Offs, Rain Water.
- Cooney & Geiger, Indianapolis, Ind.

Dampers.
- Howes, S. M. Co., Boston, Mass.
- Shields, W. H. & Co., Troy, N. Y.
- Taylor & Boggis Fdry. Co., Cleveland, Ohio.
- Troy Nickel Works, Troy, N. Y.

Die Stocks.
- Curtis & Curtis Co., Bridgeport, Ct

Draft Registers.
- Matthews, H. A. Mfg. Co., Seymour, Ct.

Drop Hammers.
- Bliss, E. W. Co., Brooklyn, N. Y
- Toledo Mach. & Tool Co., Toledo, O

Dryers.
- Sommer's, John Son, Newark, N. J.

Dumb Waiters.
- Energy Elevator Co. Phila., Pa.

Eave Troughs.
- Berger Bros. Co., Philadelphia, Pa.
- Berger Mfg. Co., Canton, O.
- Clark, Quien & Morse, Peoria, Ill.
- Eller, J. H. & Co., Canton, O.

Eave Trough Hangers.
- Berger Bros. Co., Phila., Pa.
- Berger Mfg. Co., Canton, O

Eave Trough Machinery.
- Canton Mch. Mfg. Co., Canton, O.

Edgers, Roofing.
- Danzer Metal Works, Hagerstown, Md.

Elbows, Stove Pipe.
- Lawrence-Letts Elbow Co., Ltd., Waverly, N. Y.
- Shepard, Sidney & Co., Buffalo, N. Y

Emery Wheels.
- Scranton Corundum & Emery Wheel Co., Scranton, Pa.

Enameled Ware.
- Lalance & Grosjean Mfg. Co., 19 Cliff St., N. Y.
- National Enameling & Stamping Co., 78 Beekman St., N. Y

Exhausters.
- American Blower Co., Detroit, Mich.
- Buffalo Forge Co., Buffalo, N. Y.

Faucets.
- Clark Novelty Co., Rochester, N. Y

Fire Brick.
- Presbrey Stove Lining Co., Taunton, Mass.
- Rutland Fire Clay Co., Rutland, Vt.
- Valentine, M. D. & Bro. Co., Woodbridge, N. J.
- Williams Stove Lining Co., Taunton, Mass.

Fire Pots.
- Burgess Soldering Furnace Co., Columbus, Ohio.
- Clayton & Lambert Mfg. Co., Detroit, Mich.

Fire Sets.
- Shields, W. H. & Co., Troy, N. Y.
- Troy Nickel Works, Troy, N. Y

Furnace Cement.
- Perkins, J. L. & Co. Chicago, Ill.
- Rutland Fire Clay Co., Rutland, Vt.

Furnace Pipe and Fittings.
- Excelsior Steel Furnace Co., Chicago, Ill.
- International Heater Co., Utica, N. Y.
- Meyer, F. & Bro Co., Peoria, Ill.
- Osnorn, J. M. & L. A., Cleveland, O.

Furnaces and Heaters.
- Amer. Furnace Co., St. Louis, Mo.
- Barstow Stove Co., Providence, R. I.
- Beckwith, P. D., Est. of, Dowagiac, Mich.
- Bergstrom Bros. & Co., Neenah, Wis.
- Bonnot Co., Canton, O.
- Boynton Furnace Co., 207 Water St., N. Y.
- Brand Stove Co., Milwaukee, Wis.
- Brien Heater Co., Hoosick Falls, N. Y.
- Cory, Uzal & Co. 210 Water St., N. Y
- Dighton Furnace Co., Taunton, Mass.
- Floyd, Wells & Co., Royersford, Pa.
- Forest City Fdry. & Mfg. Co., Cleveland, O.
- Giblin & Co., Utica, N. Y.
- Graff Furnace Co., 208 Water Street, New York.
- Hart & Crouse Co., Utica, N. Y.
- Hess-Snyder Company, Massillon, O.
- Howes, S. M. Co., Boston, Mass.
- International Heater Co., Utica, N. Y.
- Kelsey Heating Co., Syracuse, N. Y.
- Lennox Manufacturing Co., Marshalltown, Iowa.
- Magee Furnace Co., Boston, Mass.
- Meyer, F. & Bro. Co., Peoria, Ill.
- Moncrief Furnace & Fdry Co., Atlanta, Ga.
- Mueller, L. J. Furnace Co., Milwaukee, Wis.
- Patric Furnace Co., Springfield, O.
- Peck-Williamson Co., Cincinnati, O.
- Richmond Stove Co., Norwich, Conn.
- Schwab, R. J. & Sons Co., Milwaukee, Wis.
- Sheppard, Isaac A. & Co., Phila., Pa.
- Stamford Foundry Co., Stamford, Ct.
- Stanton Heater Co., Martins Ferry, O.
- Tubular Heating and Ventilating Co., Phila., Pa.
- Walker & Pratt Mfg. Co., Boston, Mass.

Gas Heaters. (*See Stoves and Ranges. Gas.*)

Gas Machines.
- Kemp, C. M. Mfg. Co., Baltimore, Md.

Granite Steel Ware.
- National Enameling & Stamping Co., 78 Beekman St., N. Y.

Groovers.
- Poorman Mfg. Co., Piqua, O.
- Wheeler, W. A., Indianapolis, Ind.

Gutter Formers.
- Double Truss Cornice Brake Co., Buffalo, N. Y.

Heaters, Steam and Hot Water.
- American Radiator Co., Chicago, Ill.
- Barstow Stove Co., Providence, R. I.
- Boynton Furnace Co., 207 Water St., N. Y.
- Dighton Furnace Co., Taunton, Mass.
- Drake, W. H., Newark, N. J.
- Gorton & Lidgerwood Co., 96 Liberty St., New York.
- Gurney Heater Mfg. Co., Boston, Mass.
- Hart & Crouse Co., Utica, N. Y.
- International Heater Co., Utica, N. Y.
- Kewanee Boiler Co., Kewanee, Ill.
- Magee Furnace Co., Boston, Mass.
- Mueller, L. J. Furnace Co., Milwaukee, Wis.
- National Pipe Bending Co., New Haven, Conn.
- Pierce, Butler & Pierce Mfg. Co., Syracuse, N. Y.
- Richmond Stove Co., Norwich, Conn.
- Sheppard, Isaac A. & Co., Phila., Pa.
- Smith, H. B. Co., Westfield, Mass.
- Smith & Anthony Co., Boston, Mass.
- Smith & Thayer Co., Boston, Mass.
- Stolz, Frank D., Chicago, Ill.
- Walker & Pratt Mfg. Co., Boston, Mass.

Hollow Ware.
- Lalance & Grosjean Mfg. Co., 19 Cliff St., New York.
- National Enameling & Stamping Co., 78 Beekman St., N. Y.
- Sperry, D. R. & Co., Batavia, Ill

Hotel Cooking Apparatus.
- Smith & Anthony Co., Boston, Mass.

Household Specialties.
- Shepard, Sidney & Co., Buffalo, N. Y.

Ice Cream Dishers.
- Clad, V. & Sons, Philadelphia, Pa.
- Seavey Mfg. Co., Boston, Mass

Iron, Galvanized Sheet. (*See Sheets, Galvanized.*)

Iron and Steel, Sheet. (*See Sheets, Iron and Steel.*)

Iron, Planished Sheet.
- Amer. Sheet Steel Co., New York.

Lath, Metallic.
- Schratwiesers Metal Lath Works, Brooklyn, N. Y.

Lead Pipe.
- Colwell Lead Co., 63 Centre St., N. Y.

Lead Washers.
- Littleford Bros., Cincinnati, O.

Lightning Rods.
- Washburne, E. G. & Co., 46 Cortlandt St., N. Y

Lunch Boxes.
- Seavey Mfg. Co., Boston, Mass.

Metal Ceilings. (*See Ceilings, Metallic.*)

Metal Window Frames,
- Smith-Warren Co., Boston, Mass.

Mica.
- Munsell, Eugene & Co., 218 Water St., New York.
- Ohio Mica Co., Canton, Ohio.
- Rutland Fire Clay Co., Rutland, Vt.

Milk Cans.
- National Enameling & Stamping Co., 78 Beekman St., N. Y.

Oil Heaters. (*See Stoves and Ranges. Oil, Vapor and Gasoline.*)

Oven Thermometers.
- Evans Stamping & Plating Co., Taunton, Mass.

Ovens, Portable.
- Blodgett, G. S. Co., Burlington, Vt.
- Howes, S. M. Co., Boston, Mass.

Patent Solicitors.
- Hamlin, G. R., Washington, D. C.
- Howson & Howson, Philadelphia, Pa.
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Patterns.
- Cope, Geo. W., Detroit, Mich.
- Gobeille Pattern Co., Cleveland, Ohio.
- Gray, G. L., Galesburg, Ill.
- Vedder Pattern Wks., Troy, N. Y.

Perforated Sheet Metal.
- Harrington & King Perforating Co., Chicago, Ill.

Pig Iron.
- Wister, L. & R. & Co., Philadelphia, Pa.

Pipe Cutting and Threading Machines.
- Curtis & Curtis Co., Bridgeport, Ct
- Saunders, D. Sons, Yonkers, N. Y

Pipe Joint Cement.
- Callahan, Geo. & Co., 218 Front Street, N. Y.

Pipe Vises.
- Walworth Mfg. Co., Boston, Mass.

Pipe, Water and Gas.
- Millar, C. & Son Co., Utica, N. Y.

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- Lawless, John H., Jersey City, N. J.
- Noppel Pump Co., Hartford, Conn.

Punching Machines.
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- Buffalo Forge Co., Buffalo, N. Y.
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- Toledo Mach. & Tool Co., Toledo, O.

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- Pierce, Butler & Pierce Mfg. Co., Syracuse, N. Y.

Range Boilers.
- Koven, L. O. & Bro., 50 Cliff St. N. Y.

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Refrigerators.
- Challenge Refrigerator Co., Grand Haven, Mich.
- Gurney Refrigerator Co., Fond du Lac, Wis

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- Canton Steel Roofing Co., Canton, O.
- Dighton Furnace Co., Taunton, Mass.
- Hart & Cooley Co., New Britain, Conn.
- Independent Register Co., Cleveland, Ohio.
- Seavey Mfg. Co., Boston, Mass.

Registers, Draft.
- Matthews, H. A. Mfg. Co., Seymour, Ct

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- Asphalt Ready Roofing Co., 136 Water St., N. Y.

Roofing Cement and Paint.
- Asphalt Ready Roofing Co., 136 Water St., N. Y.
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- Perkins, J. L. & Co., Chicago, Ill.
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- Millar, C. & Son Co., Utica, N. Y.

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- Harrington & King Perforating Co., Chicago, Ill.

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- Rutland Fire Clay Co., Rutland, Vt.

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Shears, Sheet Metal
- Buffalo Forge Co., Buffalo, N. Y.
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- Peck, Stow & Wilcox Co., 27 Murray St., N. Y.

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- Bertsch & Co., Cambridge City, Ind.
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- Double Truss Cornice Brake Co., Buffalo, N. Y
- Excelsior Tool & Mch. Works, St. Louis, Mo.
- Gordon, W. J., Phila., Pa.
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Miner & Peck Mfg. Co., New Haven, Conn.
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McClure & Co., Pittsburgh, Pa.
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American Sheet Steel Co., New York.
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Montross Metal Shingle Co., Camden, N. J.
Penn Metal Ceiling & Rfg. Co., Phila., Pa.

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Rasner & Dinger, Pittsburgh, Pa.

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Salem Nail Co., 279 Pearl St., N. Y.

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O. K. Mfg. Co., Buffalo, N. Y.

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Howes, S. M. Co., Boston, Mass.
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Metropolis Sheet Metals & Stove Repairing Co., Newark, N. J.
Troy Nickel Works, Troy, N. Y

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Fanner Mfg. Co., Cleveland, O.
Shields, W. H. & Co., Troy, N. Y.
Troy Nickel Works, Troy, N. Y

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Howes, S. M. Co., Boston, Mass.
Tucker & Dorsey Mfg. Co., Indianapolis, Ind.

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Stamford Foundry Co. Stamford, Ct.
Walker & Pratt Mfg. Co., Boston, Mass.
Weir Stove Co., Taunton, Mass
Western Stove Works, Peoria, Ill.
White, Warner Co., Taunton, Mass.
Willard, Wm. G., St. Louis, Mo.

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Meurer Bros. Co., Brooklyn, N. Y.
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Ohl, Geo. A. & Co., Newark, N. J.
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McClure & Co., Pittsburgh, Pa.
Merchant & Co, Philadelphia, Pa.
Meurer Bros. Co., Brooklyn, N. Y.
Osborn, J. M. & L. A., Cleveland, Ohio.
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Washburne, E. G. & Co., 46 Cortlandt St., New York.

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Littleford Bros., Cincinnati, O.
Marston, I. G. & Co., Boston, Mass.

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Water Coolers.
National Enamelling & Stamping Co., 78 Beekman St., N. Y

Water Closets.
Colwell Lead Co., 63 Centre St., N. Y.

Water Fronts.
Clark, Henry N. Co., Boston, Mass.

Water Heaters.
Adam, W. J., Joliet, Ill
Kemp, C. M. Mfg. Co., Baltimore, Md.

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A first-class TIN HOUSE FOREMAN: must be competent man. "Foreman," care *The Metal Worker,* Park Building, Pittsburgh, Pa. May 31

Men familiar with the putting up of metal ceilings. Lyles & Mills Metal Ceiling Company, 231 William street, New York. May 31

A good GALVANIZED IRON CORNICE WORKER, who can cut and lay out his own patterns and take quantities from plans. Frank R. Jarrell, Lexington, Ky. May 31

DRAFTSMAN wanted on cornice and skylight work; first-class man only; state experience and wages desired. David Lupton's Sons, Allegheny avenue and Tulip street, Philadelphia, Pa. May 31

A reliable TINNER and SLATER can have a yearly contract at good wages. Apply at once to C. C. Henrie, Xenia, Ohio. May 31

At once, an experienced PLUMBER capable of making wiped joints and understanding plumbing thoroughly; also work at roofing and gutter work; must be sober and reliable; steady work to right man. Box 915, Bennington, Vt. May 31

One first-class TINNER, who can do all kinds of job work in the shop in tin and galvanized iron. Also two first-class CORNICE WORKMEN: need not be pattern cutters, but must understand putting up work, in the shop and outdoors; none but first-class, sober and reliable men need apply: good wages. Apply at once to the Houston Cornice Works, Houston, Texas. May 31

A practical man for country shop; tinning, plumbing and heating: steady work. The Biggs Company, Trumansburg, N. Y. May 31

A good all round TINNER and SHEET IRON WORKER; must be sober and reliable; give references; state wages wanted; a good quick workman can have steady work the year around. Byrne and Maury, Rossville, Vermillion County, Ill. May 31

First-class CORNICE CUTTER and GALVANIZED IRON WORKER; must be sober and reliable; permanent position to the right man. J. N. McCausland & Co., Charlotte, N. C. May 31

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Several good SHEET IRON WORKERS as road mechanics; those used to blow pipe work preferred; state age, wages expected, and where last employed. Apply to the Ohio Blow Pipe Company, corner Seneca and Michigan streets, Cleveland, Ohio. May 31

Good all round TINNER and PLUMBER; willing and able to clerk in store if necessary; steady job to right man in live, up to date town of 1200 inhabitants. O'Neill and Gilmer, Sisseton, S. Dak. M. R. O'Neill, Fargo, N. Dak. May 31

A good, honest, sober man, with some knowledge of heating and plumbing preferred; must give references; to the right man we can pay good wages and give steady employment. E. H. Keach & Co., Danielson, Conn. May 31

A first-class and thoroughly experienced SHIPPER, acquainted with iron pipe and fitting business. Write, giving experience and salary expected, to Post Office Drawer 1530, Philadelphia, Pa. May 31

SLATE and TIN ROOFERS: steady work for sober, reliable men: none others need apply: state wages wanted. A. C. Hathorne, Burlington, Vt. May 24

First-class TINSMITH for all round work; steady job for right man. Treracy Bros., Ballston Spa, N. Y. May 24

A competent man as FOREMAN of a brass foundry and finishing plant engaged in the manufacture of plumbers' brass goods. P. O. Box 42, Salem, N. J. May 24

A man thoroughly understanding pattern cutting and the erection of architectural sheet metal work, as FOREMAN in a union cornice and skylight shop; must be practical and a man of experience, capable of at times handling from 20 to 30 men; references must be furnished as to ability and experience; a permanent position is open to such a man proving himself to be capable. "Jersey," care *The Metal Worker,* New York. May 24

A good all around man that understands plumbing and tinsmithing; work the year round; must give references. Morgan & Murray, Cadillac, Mich. May 24

Two good TINNERS, also two good SLATERS; good job for the right men. Apply to the Peet & Schuster Company, Springfield, Ohio. May 24

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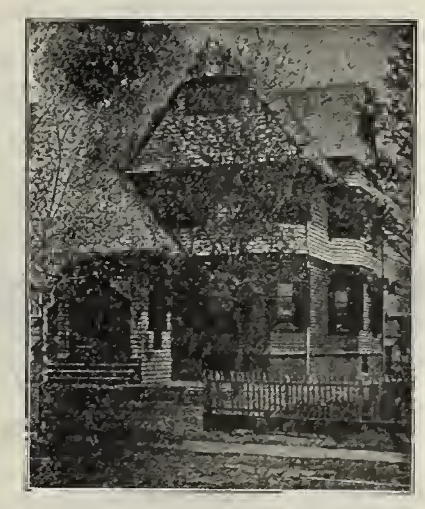

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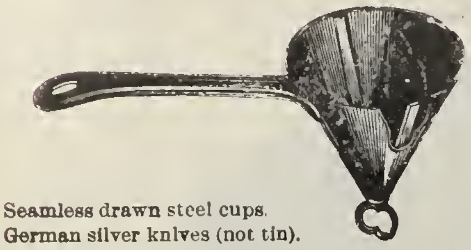

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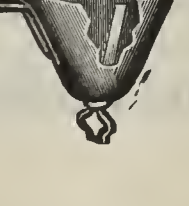

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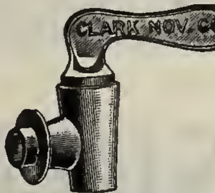
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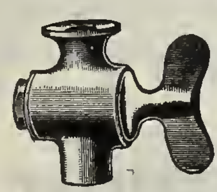

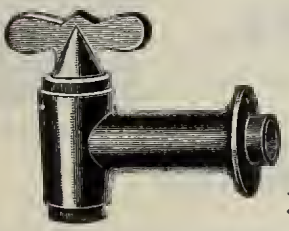

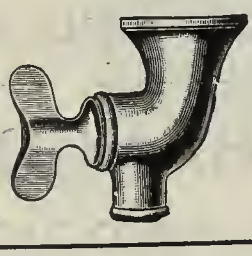

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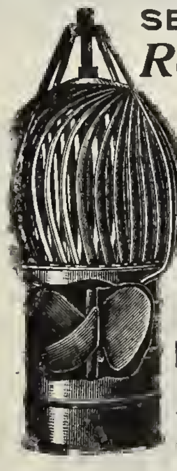

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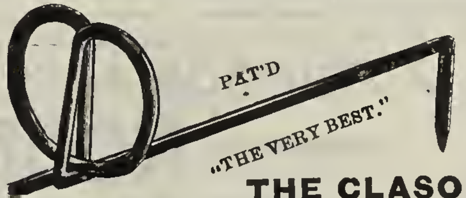

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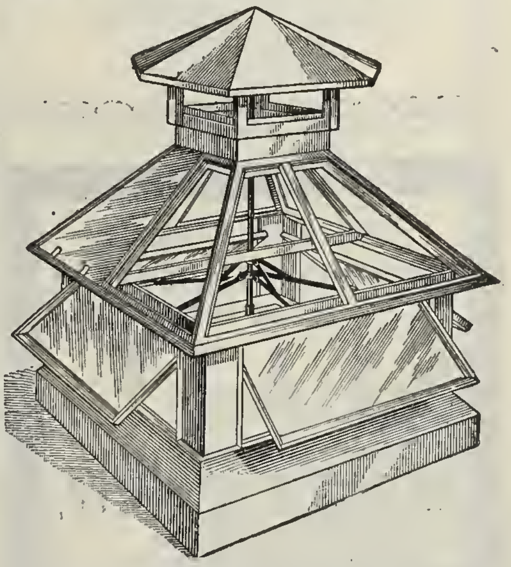

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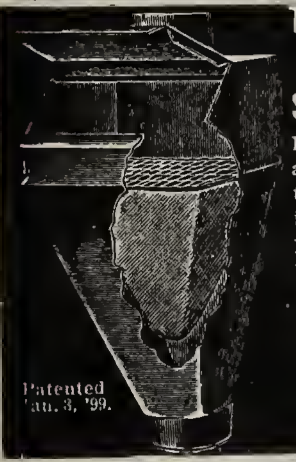

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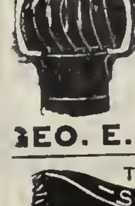

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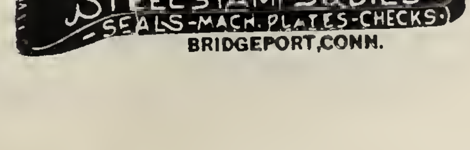

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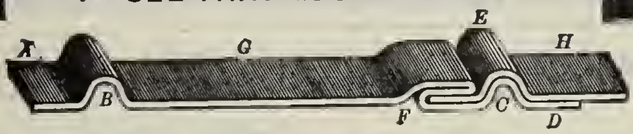

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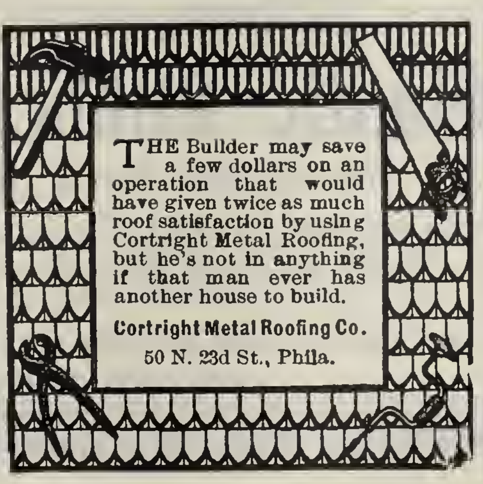

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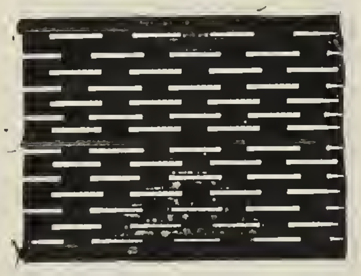

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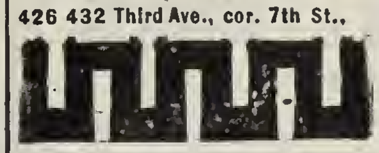

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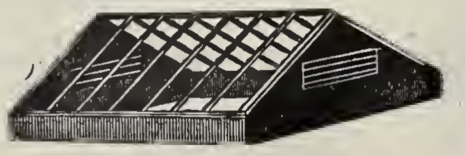

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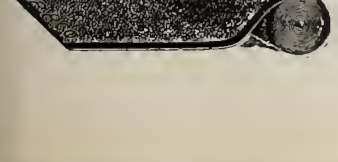

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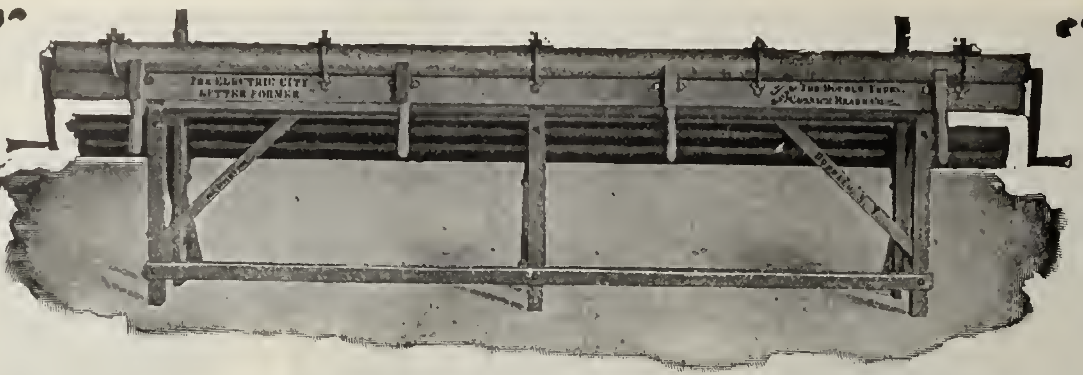

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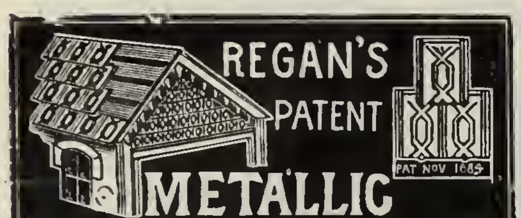

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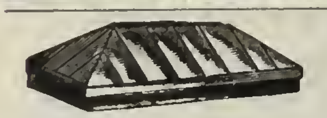

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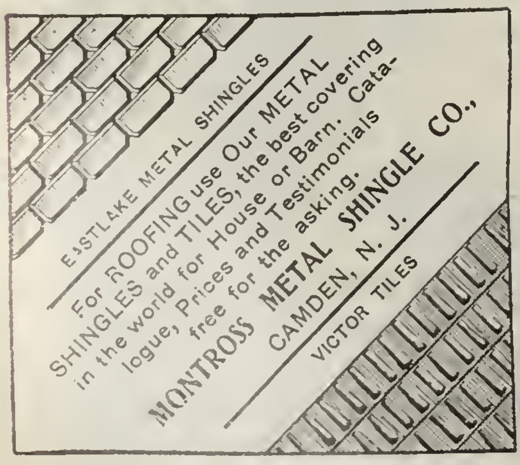

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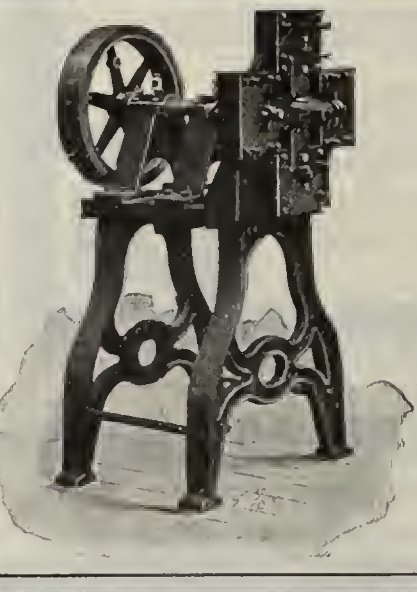

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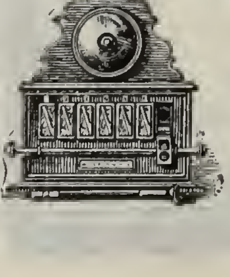

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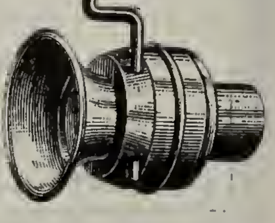

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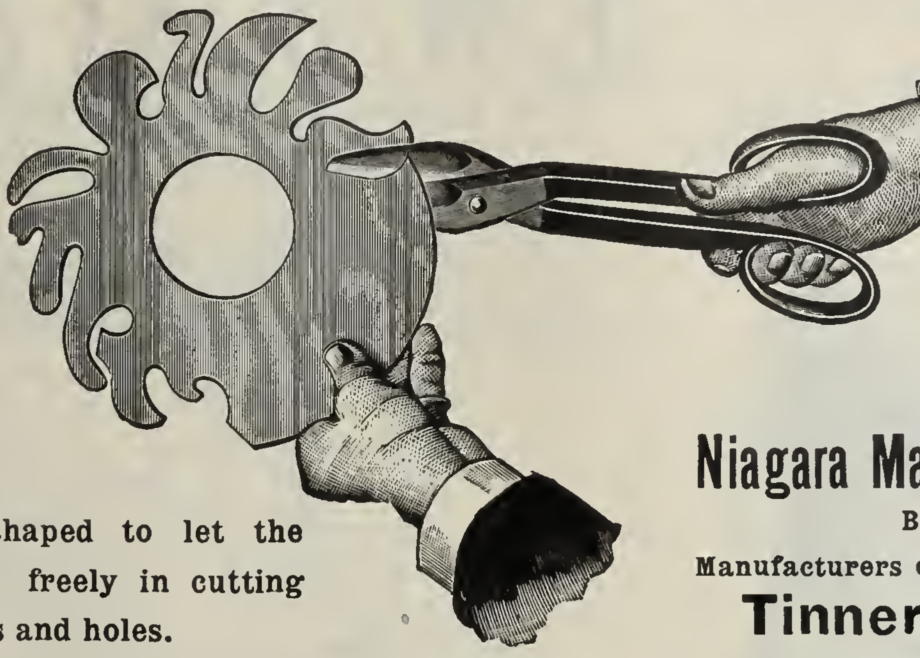

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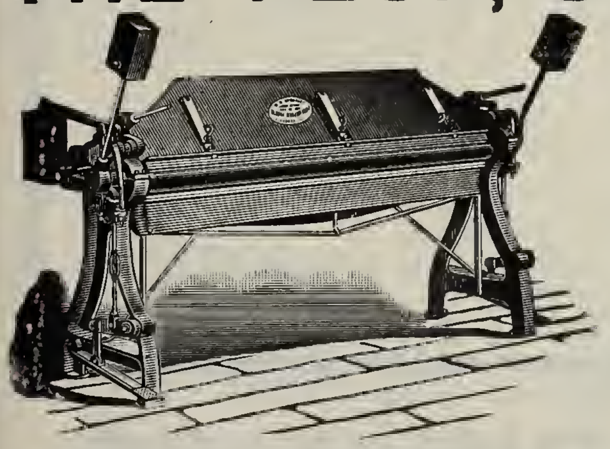

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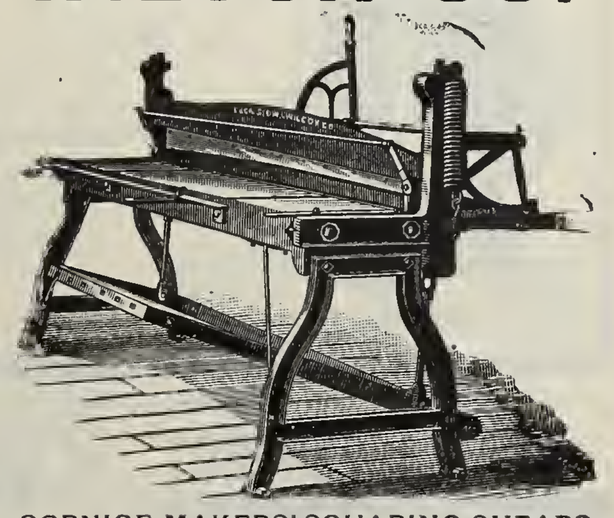

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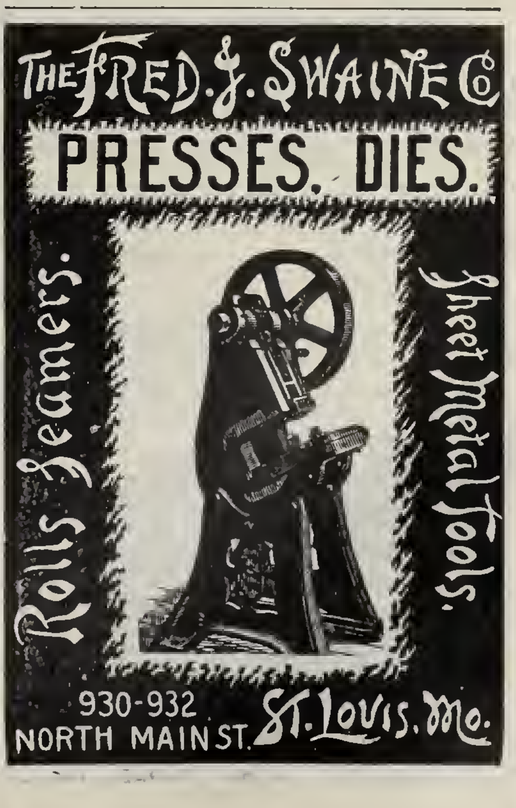
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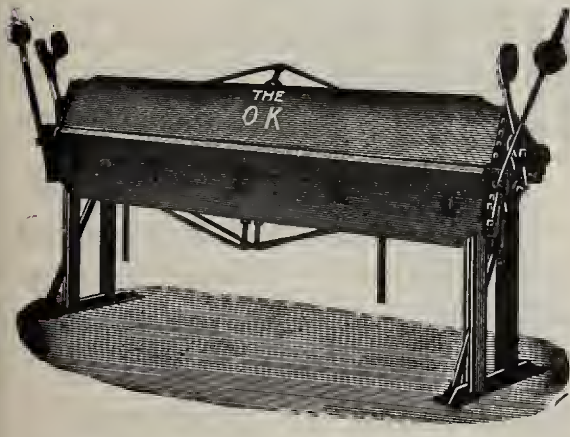

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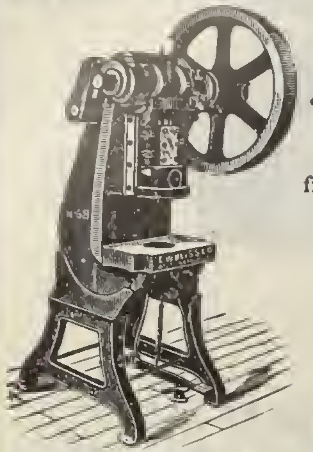

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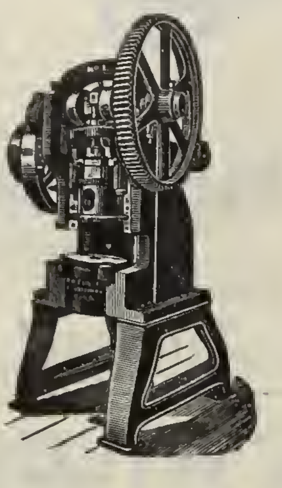

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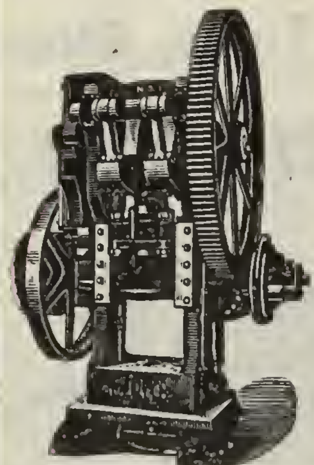

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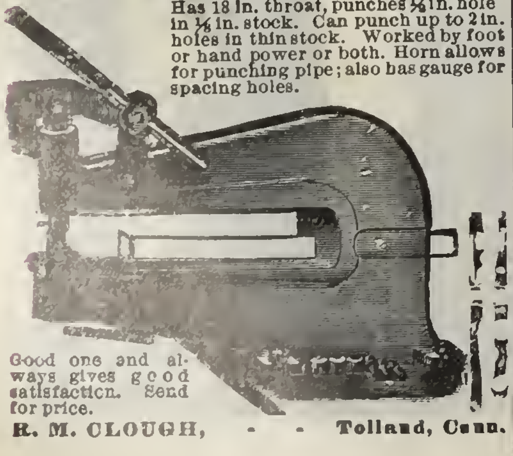

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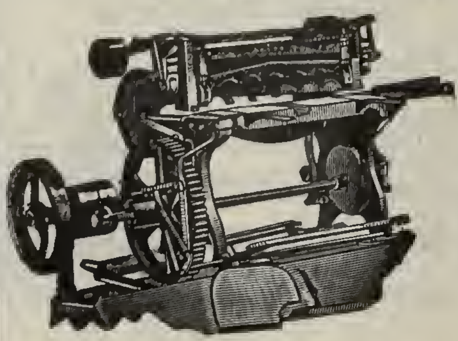

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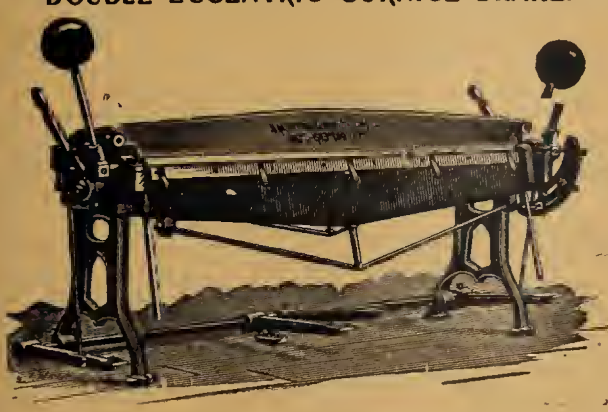

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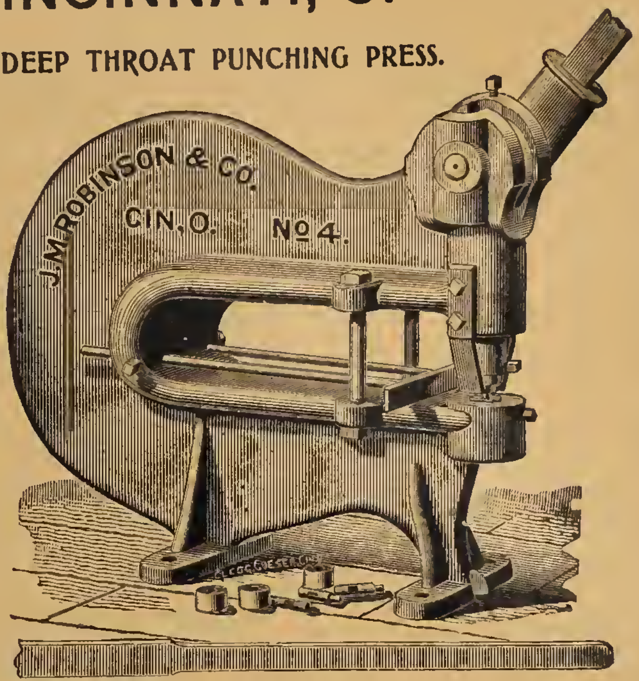
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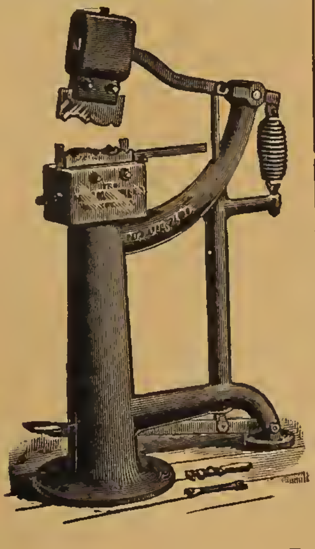

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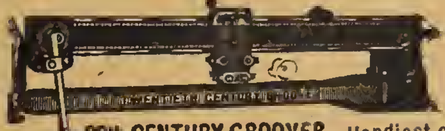

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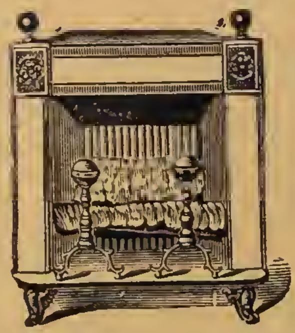

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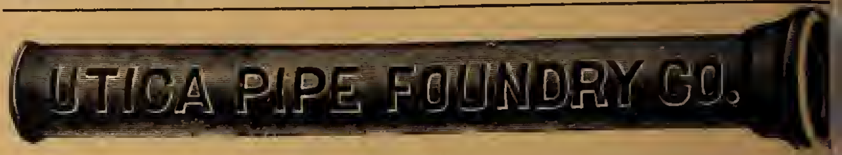
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A WEEKLY JOURNAL OF THE STOVE, ROOFING, CORNICE, TIN, PLUMBING AND HEATING TRADES.

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, LVII.
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NEW YORK AND CHICAGO, JUNE 7 1902.

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SINGLE COPIES 5 CENTS

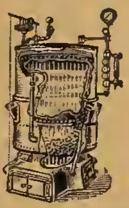
HALL'S BRASS PIPE WRENCH.

With a GRIP that GRIPS without Marring the Pipe.

No. 1 Grips up to 1 Inch. No. 2 Grips up to 2 inches.

ALWORTH MFG. CO. *Boston, 128 Federal St.*
New York, Park Row Bldg.

OUR CATALOG OF ENGINEERS' AND STEAM FITTERS' TOOLS WILL INTEREST YOU.



The Gorton Side Feed Boilers

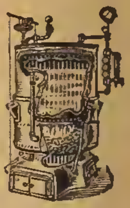
FOR STEAM AND HOT WATER HEATING.

INVESTIGATE FOR YOURSELF.

Send for Catalogue and Prices.

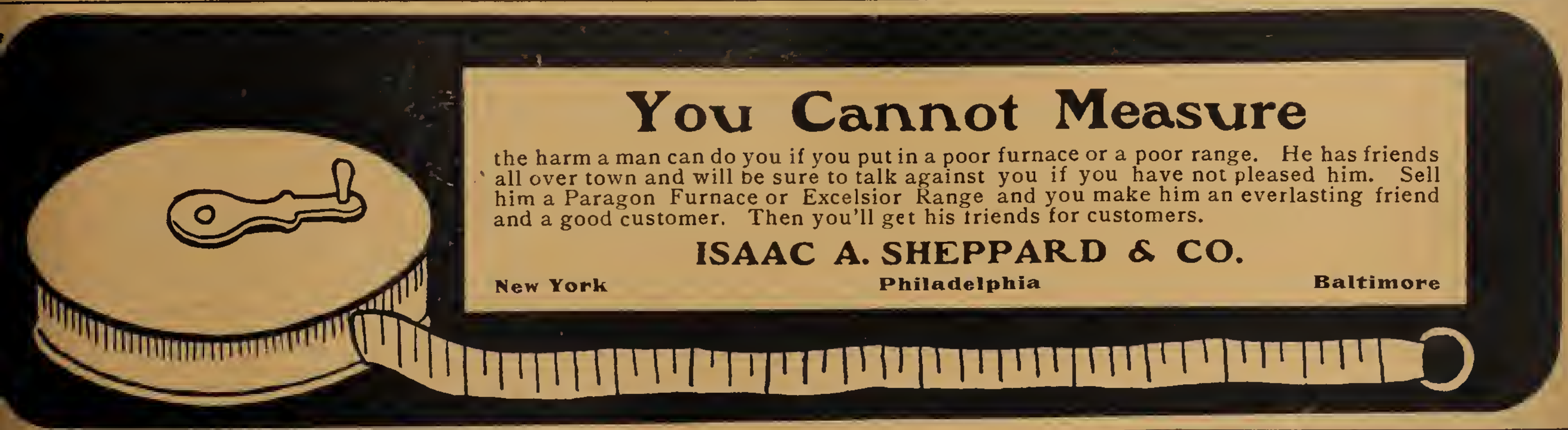
GORTON & LIDGERWOOD CO.,

96 Liberty St., NEW YORK. Old Colony Bldg., CHICAGO.
77 Oliver St., BOSTON. Prudential Bldg., ATLANTA GA.



STOVE LININGS McLEOD & HENRY CO.,
TROY, N. Y.

AMERICAN STEAM and ALTITUDE GAUGES, POP SAFETY VALVES.
Heating Specialties. American Steam Gauge & Valve Mfg. Co., Bismark St., Boston, Mass., U. S. A.



You Cannot Measure

the harm a man can do you if you put in a poor furnace or a poor range. He has friends all over town and will be sure to talk against you if you have not pleased him. Sell him a Paragon Furnace or Excelsior Range and you make him an everlasting friend and a good customer. Then you'll get his friends for customers.

ISAAC A. SHEPPARD & CO.
New York Philadelphia Baltimore

APOLLO BEST BLOOM
GALVANIZED IRON

What does anyone gain
using common gal-
nized iron?
Nothing; and loses
me (which is wages)
d standing (which
so is money).

erican Sheet Steel Company, New York

Steam Specialties.

LIEF and
EVATOR VALVES,
EAM TRAPS,
EAM AND WATER
DUCING VALVES,
K TEMPERATURE
A No. 1 DAMPER REGULATORS
NOISELESS BACK PRESSURE VALVES,
PUMP GOVERNORS,
STEAM and OIL SEPARATORS
CONTROLLER and

KIELEY AND MUELLER,
17 W. 13th St., - NEW YORK.

If you have a line of
P. P. STEWART'S STOVES
on your sample floor your
trade is assured
Quick sellers bring big profits.

FULLER & WARREN CO., Troy, N. Y.

This Ad. changes every week.

NOTICE.

Silver, Nickel Platers and Brass Goods Mfrs. MATERIAL FOR DRYING PURPOSES.

Write for prices to John Sommer's Son, 355-365 Central Ave., Newark, N. J.

CROSBY SPRING-SEAT
GLOBE and ANGLE VALVES, IRON and BRASS.

All working parts renewable without taking the valve from piping. All parts interchangeable. Guaranteed not to leak at high pressure. Send for circular.

Crosby Steam Gage & Valve Co.,
BOSTON: 95 Oliver St. NEW YORK: 78 John St. CHICAGO: 21 23 W. Lake St.

JENKINS BROTHERS' VALVES

Perfectly tight under all pressures of steam, oils or acids.
Warranted to give satisfaction under the worst conditions.

Received the Highest Award GOLD MEDAL At the Pan-American Exposition.

Insist on having the genuine stamped with Trade-Mark.

JENKINS BROTHERS, New York, Boston, Philadelphia, Chicago.

FOLLANSBEE BROTHERS CO.,
328-330-332 Second Ave.,
Pittsburgh, Pa.
Galvanized and Black Sheets.
Sheet Copper, Conductor, Eave Trough.

FOUR WINNERS:
Follansbee Pure Iron Old Style,
Scott's Extra Coated,
Old Reliable Redipped,
Lionel Old Style.

Philadelphia, 133 Arch Street.
Chicago, 504 North Water Street.
Louisville, 7th and Magnolia.

READ OUR "AD"
Page 6.
MAGEE FURNACE CO.,
Boston.

ROUND OAK
STANDARD OF
AMERICA

We frequently
have it said to us
"We cannot sell
your furnace, it is
too high priced."
At the same time

**The
Round Oak
Furnace**

is being sold
(and its sales are
steadily growing)
by hundreds of
our customers
who started in
confronted by
the same conditions
that seem to face
the faint-hearted
who make
the above remark.

There are plenty of people
who want the best
if they only know
where to find it.
And the furnace man
should have the ability
to stand up and
succinctly explain
why the furnace
of quality is the
cheapest one to buy.

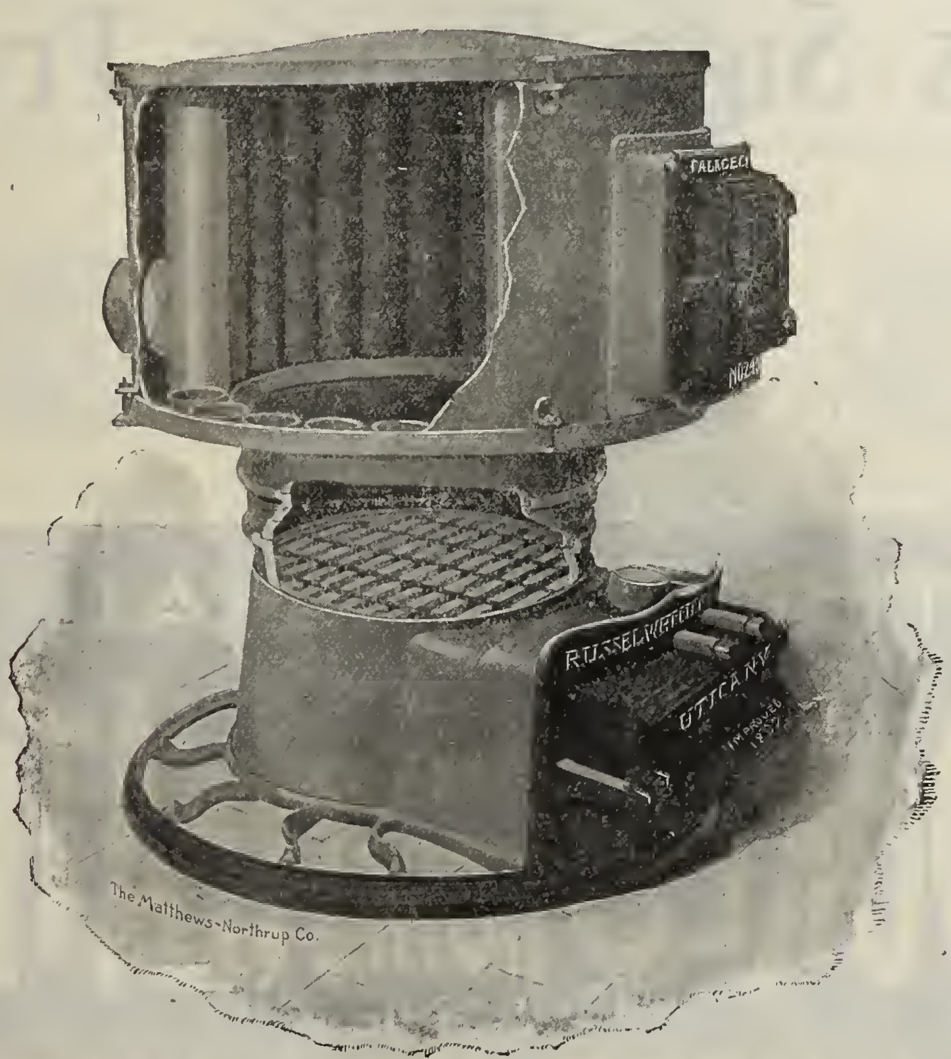
Estate of
P. D. BECKWITH
Dowagiac, Mich.

Makers of
Good Goods
only.

Attractive Windows, Attentive Clerks, Display Ads.
These are Trade Getters.
But they do not Compare with the Free Advertisement
Given by Pleased Customers—Sell Good Goods.

Palace Queen

WARM AIR FURNACE.


UTICA N.Y.
The Matthews-Northrup Co.

A peculiarly efficient heater of original design. The arrangement of wrought iron tubes and large combustion spaces secures

REMARKABLY EFFECTIVE
RADIATING SURFACE.

Convince Yourself.

INTERNATIONAL HEATER CO.,
LARGEST MAKERS OF HEATING AND LIGHTING APPARATUS IN THE WORLD.
CATALOGUE OF OUR ACETYLENE GAS MACHINE WILL INTEREST YOU.
UTICA, N. Y.
NEW YORK. BOSTON. CHICAGO. DENVER.

M TRADE MARK

Moore's Air-Tights

M TRADE MARK

This Sign Draws Trade

THE ORIGINAL

MOORE'S AIR TIGHT HEATER

WILL KEEP YOU WARM

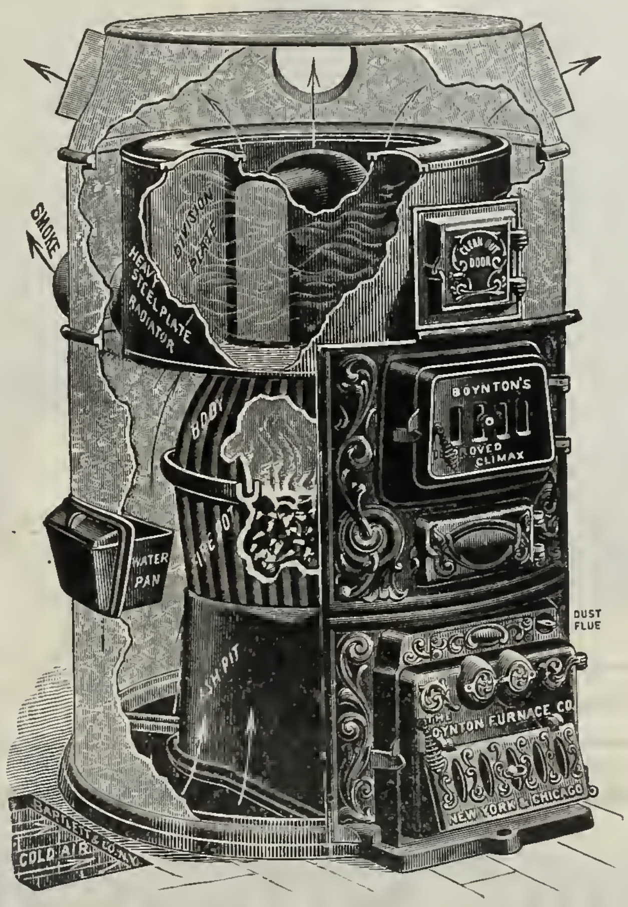
You will find it linked together
with the names of prosperous
merchants wherever you go

JOLIET STOVE WORKS

JOLIET, ILLINOIS

43

Boynton's Improved Climax Furnace



THE CLIMAX FURNACE, patented in 1884 and placed on the market the same year, has been more extensively imitated by manufacturers throughout the country than any type of furnace made. We have in the construction of the Climax Furnace provided for such superior weight of metal as to insure resistance to many years of wear and tear.

We now present it with its latest dress of modern design.

The practically minded dealer will agree with us as to the desirability of limiting the height of the iron front (which is merely ornamental), so that the clean-out door will be independent of it and the radiator may be turned around to accommodate any position of the smoke pipe, and not be confined to a back outlet, as with all high front furnaces.

The gas dome over the fire, both in the Steel Plate and Cast Iron Radiator, is of heavy cast iron, which affords a measure of durability far superior to the sheet iron construction at this point common to so many cheap imitations of this furnace.

The travel of the heated products of combustion throughout the entire circuit of the radiator is invariable; the entire volume of heat being applied to all the heating surfaces of the radiator, renders its efficiency double that of a radiator with the half circuit of a divided current common to so many furnaces.

Fitted in the best manner; doors mounted with bronze hinge-pins, upright shaker bars, anti-friction, clinker-clearing, draw-center grate, or the patent triangular revolving grates as desired; has dust-flue, obviating dust when clearing grate.

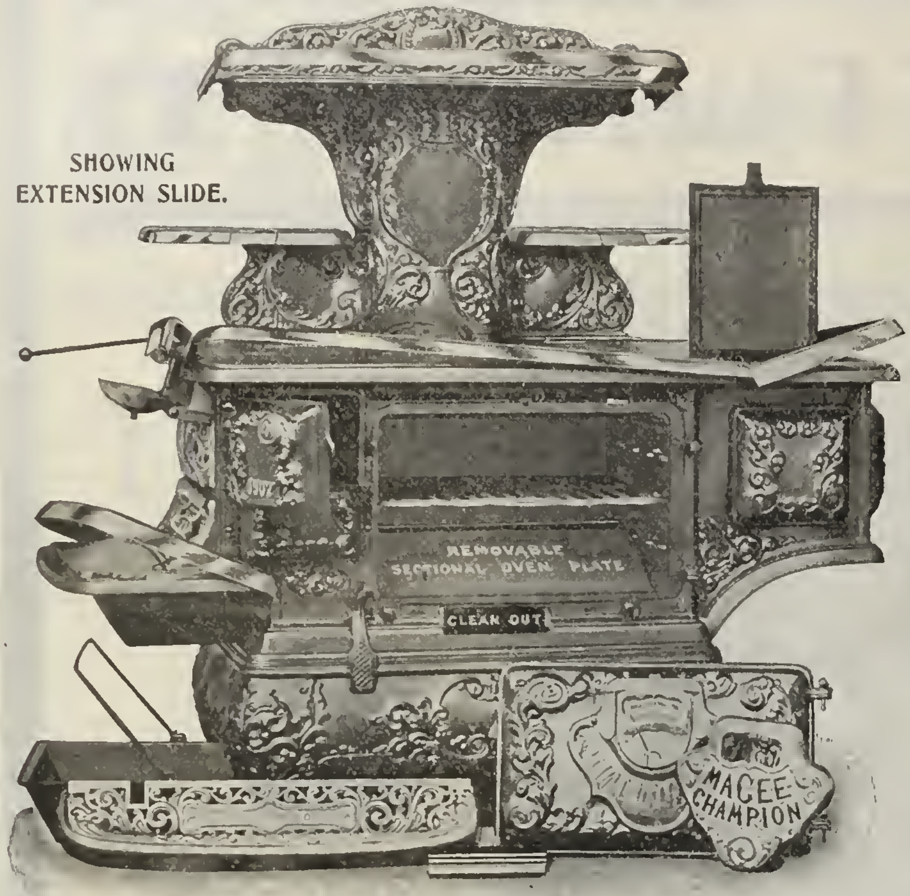
OUR CATALOGUE WILL INTEREST YOU.

THE BOYNTON FURNACE COMPANY

NEW YORK **CHICAGO**

MAGEE CHAMPION.

—OUR LATEST ADDITION.—



SHOWING EXTENSION SLIDE.

FOUR STYLES OF GRATE. OVEN HEAT INDICATOR.

Appreciated

By Neat and Tidy

Housekeepers

The ease with which all nickeled parts can be removed is a great convenience when blacking the range.

Our Damper

is operated from **front of range—one movement controls**—it cannot warp or burn out—it allows the use of smoke pipe from either **top** or **back** of range.

You should not fail to send for further information, prices, etc.

Magee Furnace Co.,

MAKERS

Steam and Hot Water Heaters,
Furnaces, Ranges, Stoves, etc.,
Coal, Wood or Gas. . . . .

32-38 UNION STREET. BOSTON.
86 LAKE STREET, CHICAGO.

Attention! Stove Dealers

We Wish to Call Your Attention to our New Stove Polish . . . .

BLACK KID.

This Polish is especially put up for stove dealers who require something extra fine for their sample stoves, and who are willing to pay a little more than other polishes cost.

5 lb. cans, = = = 65c. per can.

Ask your Jobber for it.

NICKEL PLATE STOVE POLISH CO.,

Sole Manufacturers, CHICAGO.

STOVES AND RANGES
CINDERELLA
NEVER FAIL

We wouldn't be selling this stove if we didn't believe it surpasses all others of its kind. You can be convinced that the

"FOREST CINDERELLA"

is the best if you take time to investigate. It has a large side door, providing a ten inch opening. The inside door is protected with a shield which prevents the cold air from striking the fire direct. A sweat damper prevents Creosote deposits. Mounted air tight with the best quality of Wood's refined oak stove body iron, uniform color, 22 gauge.

We want you to ask us for more information. Write now.

Address Dept A,

The Pittsburg Stove & Range Co.

PITTSBURG, PA.

Border Copyright '98.

REGARDING
Boomer Furnaces.
OR
Boomer Steel Ranges

We want to state in strongest terms possible that if you want the
HEAVIEST,
MOST DURABLE,
MOST ECONOMICAL
and easiest to take care of Furnace or Steel Range, buy a **BOOMER.**

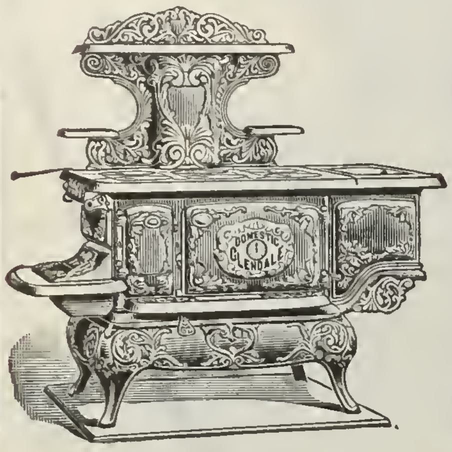
Boomer Furnace.

Neither time nor money is spared to make them the Best.
Buy Boomers and save your coal bills.
We invite investigation.

Boomer Steel Range.

THE HESS-SNYDER CO.,
Manufacturers, MASSILLON, O.

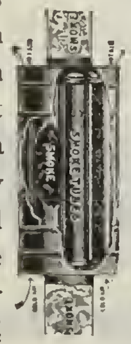
GLENDALE
Stoves and Ranges



Manufactured by
SOMERSET STOVE FOUNDRY CO.,
SOMERSET, MASS.
Send for a Sample.

Common Sense
Circulator and Radiator.

(Patent applied for.)



This Heater is so simple that its superiority over all others is plain. Being open at each end the cold air is taken in at the bottom, passing out at the top heated; producing a circulation unequaled by any radiator. Is easily cleaned or repaired. Takes the place of a joint of pipe. Diameter of casings, 10½ and 12½ inches. Send for prices.

A. C. SELLECK,
755-757 W. Madison St., CHICAGO, ILL.

SCRANTON CORUNDUM
& EMERY WHEEL CO.
1311-1315 Capouse Avenue, SCRANTON, PA.
Write for Catalogue.
OUR "BLACK DIAMOND"
artificial abrasive wheels are especially adapted for
The Stove Trade
THEY ARE THE BEST.

The Milwaukee Pattern Works.
Ornamental and Stove Patterns.
Sketches and Designs for Stove Work of all kinds.
Correspondence Solicited.
505-507 Cedar Street MILWAUKEE, WIS.

—Mollified His Indignation.—Indignant Father: "Hadn't you done anything but laugh?"

Boy: "No; nothing at all."

"And the master caned you for that? The scoundrel! I'll teach him——"

"Yes, and he thrashed me hard, too! He's a great big man."

Father (not quite so indignant): "H'm, is he? You mustn't laugh in school, Johnny. It's against the rules."—*Tit-Bits.*

HOME COMFORTERS FOR

"NEW PROCESS" AND "STANDARD" OIL HEATERS.
MADE BY THE STANDARD LIGHTING CO.
CLEVELAND OHIO.
Sold by Jobbers and Dealers everywhere.

I Will Give the Public the Benefit.

Having completed patterns for my 1902 line, I will close out my last year's pattern of the celebrated

400 LB. WILLARD STEEL RANGE for $15.00.

This is Less than 4c. per pound.

They have six 8 inch lids. Oven, 17 x 21 x 12. Top Cooking Surface, 30 x 36. Large Warming Closet. 15 gallon Reservoir. Duplex Grate, Burns Wood or Coal. Lined throughout with Asbestos.

EVERY ONE GUARANTEED. BUY NOW AND SAVE 100%.
Write for Free Descriptive Circular and Testimonials.
"FIRST COME—FIRST SERVED."

WM. G. WILLARD,
619-621 N. 4th St., - - St. Louis, Mo.

20th Century Gas Stoves
THE BEST GAS STOVE MADE.
Best Materials and Workmanship. Prices Low. Mail Orders Promptly Filled.
STOVE REPAIRS IN STOCK
FOR 2,000 STOVES AND RANGES.
Write for Prices.
THE METROPOLIS SHEET METALS AND STOVE REPAIRING CO.,
261-261½ Springfield Ave., Newark, N. J.

Ideal Premier Tank Heater.

Our New Ideal Premier Tank Heater

is now ready for the market, and we invite your critical examination of its various features of construction.

Send for 1902 profusely illustrated catalog.

AMERICAN RADIATOR COMPANY

Lake and Dearborn Streets,
Chicago, U. S. A.

New York. Philadelphia. Buffalo. St. Louis. Minneapolis. Denver.

SEND FOR PRICES

MODEL

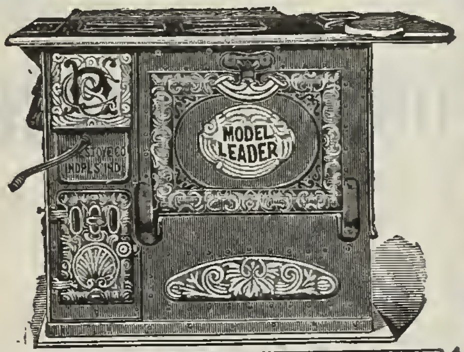
STOVES and RANGES

Take the lead all over the United States.

MANUFACTURED BY

The Home Stove Company,

Indianapolis, Ind.



MODEL LEADER

STEEL COOK

EXCELS THEM ALL

If You're a Hustler and Mean Business We Want You to Take the Agency for Our "Built to Bake"

Household Ranges

WHITE, WARNER CO., TAUNTON, MASS.

BRAND STOVE CO.

STOVES, RANGES and FURNACES.

SEND FOR CATALOG.

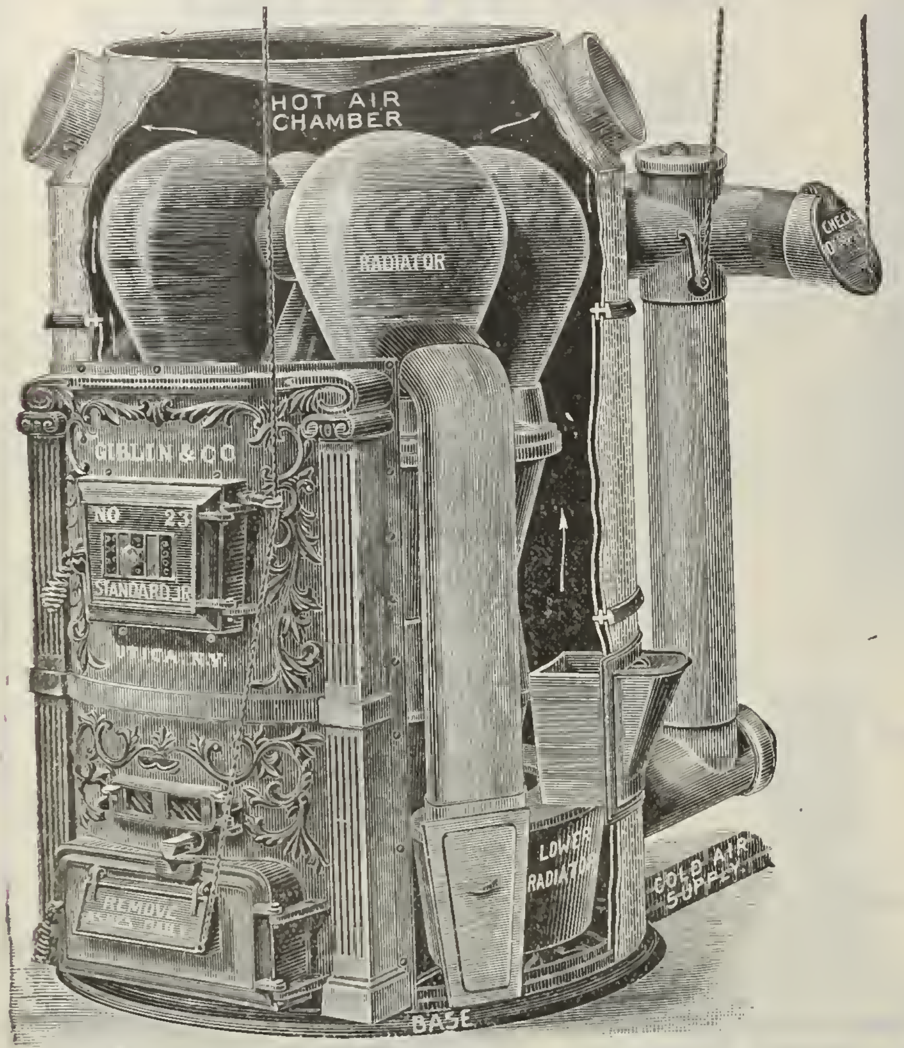
MILWAUKEE, WIS.

TOUCH A MAN'S POCKET

and you touch a sensitive spot. If your customer asks for a furnace and you furnish him with the cheapest furnace obtainable, it surely is not the best and he will judge all other furnaces by what he gets. He will, by using the cheapest furnace, burn more coal than he should; will burn it imperfectly.

IT WILL cause more work, need frequent repairs, make him thoroughly dissatisfied. Such are the results of a direct draft furnace. We present the furnaces illustrated herewith to

SHOW what indirect draft furnaces can accomplish. Nobody now uses a direct draft heating stove, because of the waste of fuel and the impossibility of regulating it.



These Furnaces are in furnaces what base burners are in stoves and Secure for the user the benefit of Heat without wasting fuel. They are operated with a steady low fire, providing an even continuous temperature In Every Room.

Whichever dealer secures the agency of these furnaces is sure to get the bulk of the business; and because he is selling something different from all other dealers will make sales at a good profit and make every one sold an advertisement for his business.

Dealers who have sold other furnaces and have found no profit in the business should investigate the merits of these furnaces and secure the agency and exclusive territory.

OUR CATALOG FULLY EXPLAINS.

GIBLIN & CO.
UTICA, N. Y.

THE H. B. SMITH CO.,
WESTFIELD, MASS., U. S. A.

Catalogue furnished only upon application to

Heating Contractors, Engineers and Architects

92 Pages. Size 9 x 12 Inches.

COTTAGE
BOILERS.

STEAM BOILERS (8 SIZES), 550 SQ. FT. RADIATION SUPPLIED.
WATER BOILERS (8 SIZES), 900 SQ. FT. RADIATION SUPPLIED.

PACIFIC COAST AGENTS
HOLBROOK, MERRILL & STETSON,
SAN FRANCISCO, CAL.

EUROPEAN AGENTS
AUG. EGGERS,
BREMEN AND NEW YORK CITY.

SALESROOMS:

THE H. B. SMITH CO.,

133 CENTRE STREET,
NEW YORK.

510 ARCH STREET,
PHILADELPHIA.

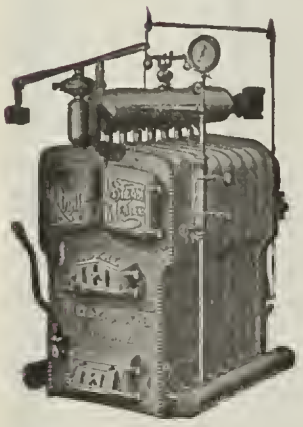
Royal Heaters.

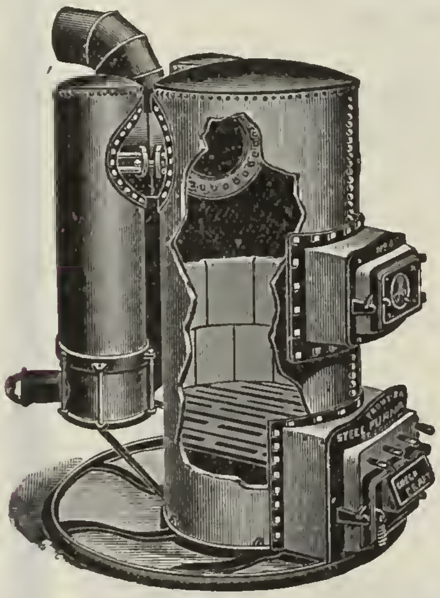
HART & CROUSE CO.,

235 Water St., New York.
78 Lafayette St., UTICA, N. Y.
79 Lake St., Chicago.

The Leading Line of Heating Apparatus.

HOT WATER,
STEAM,
HOT AIR.



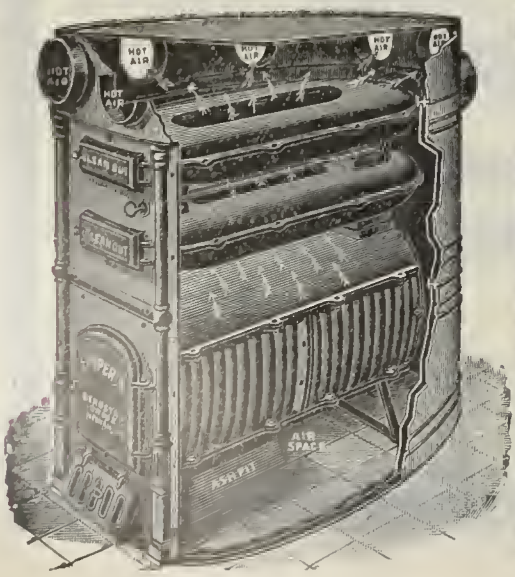


A FEW POINTS OF SUPERIORITY

Fire pots are of fire clay tiling and never burn out.
Radiator surface in proportion to grate surface unusually large.
Only absolutely gas tight furnace made.
Novelty of construction makes an easy seller.
Tested for fifteen years.

Repairs are seldom necessary.
Are guaranteed to burn hard or soft coal.
No direct draft to warp out of shape, nor packed joints to leak gas.
Katalogue and prices will be mailed you upon application.

FRONT RANK STEEL FURNACE CO., 2301 to 2309 Lucas Ave., St. Louis, Mo.



Emperor Furnaces

FOR WOOD.

Simple, Safe, Durable. Economical in Fuel.

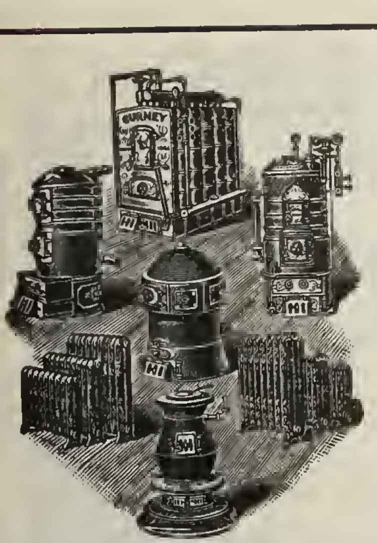
The Best and Cheapest Line of Wood Furnaces. . . .
Furnished for either Brick or Galvanized Iron Casing

SEND FOR CATALOGUE.

Bergstrom Bros. & Co.

NEENAH, WIS.

The Financial Argument.



Some of the heaters on the market are not worth their price because better value can be secured for the same money. That's the great argument in behalf of

"GURNEY" HEATERS,

BRIGHT IDEA DORIC and 400 SERIES.

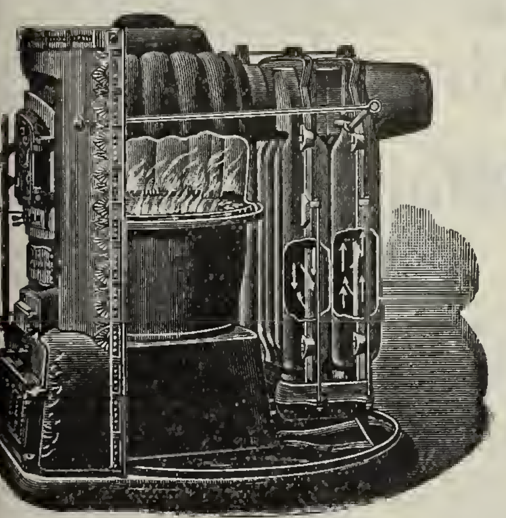
They furnish decidedly greater value yet they cost no more than ordinary heaters. Not only do we say so but a host of testimonials from present users corroborate this statement.

That one fact alone ought to be sufficient to induce every dealer who wants the fullest measure of business to handle "Gurney's." If you are in that class we shall expect to hear from you relative to an agency. Latest trade catalogue for the asking.

Gurney Heater Mfg. Co.,

74 Franklin St., Boston. *111 Fifth Ave., New York City.*

Western Selling Agents, James B. Clow & Sons, 358 Franklin St., Chicago, Ill.



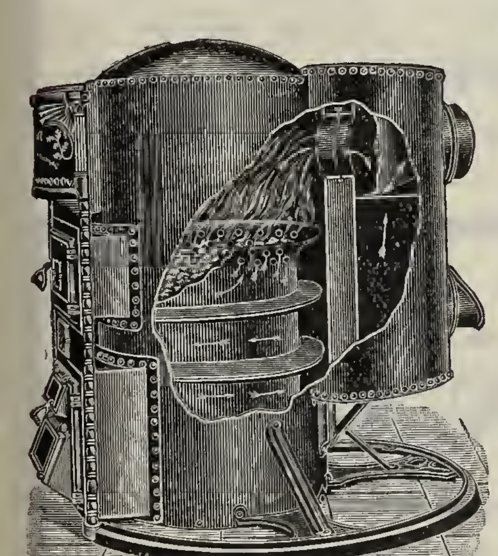
BENGAL

A WINNER EVER SINCE IT HAS BEEN ON THE MARKET. WHY? BOOKLET FREE FOR THE ASKING.

EASTERN SELLING AGENTS:
GURNEY & CO.,
Washington, Hanover and Elm Streets, Boston, Mass.

FLOYD, WELLS & CO., Royersford, Pa.

NEW YORK OFFICE, 210 WATER ST., R. W. HILLMAN, Manager.

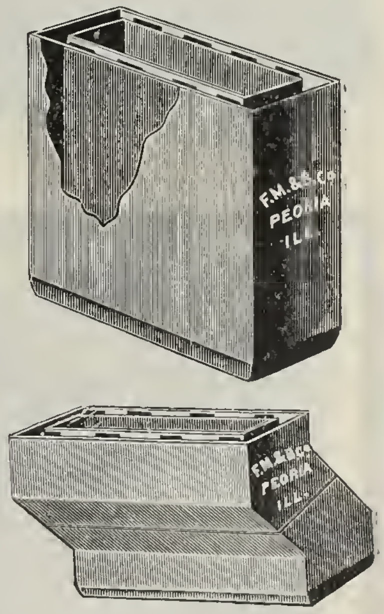


WEIR ALL STEEL GAS AND SOOT CONSUMING FURNACE.

THE HEAVIEST STEEL FURNACE MADE.

Absolutely gas and dust tight. A great heat-producer but a fuel saver.

MANUFACTURED BY
THE MEYER FURNACE CO.,
1300-1304 S. Washington St.,
SEND FOR CATALOGUE. PEORIA, ILLS.



"The Handy Furnace Pipe."

MADE WITH A VIEW OF BEING SAFE.

The saving of labor in putting it up really makes it the cheapest hot air pipe on the market.

MANUFACTURED BY
F. MEYER & BRO. CO.,
SEND FOR CATALOGUE. PEORIA, ILLS.

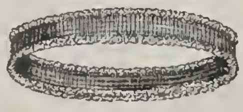
STOVE REPAIRS

Bought from us entitle the purchaser to a 1000 Mile Book FREE on any railroad.

HAVE YOU RECEIVED ONE OF THEM? WRITE FOR PARTICULARS.

CHAS. C. HEATH & CO., - -

HEADQUARTERS FOR

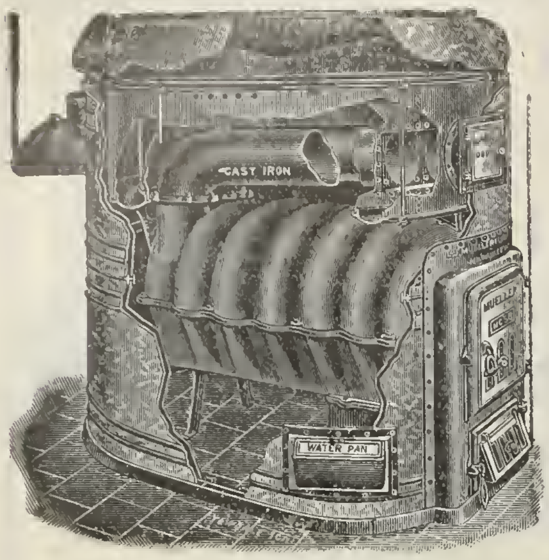
WICK  **RINGS**

For all Blue Flame Oil Stoves made— at startling low prices.

ELECTRIC BLUE FLAME COOKS

Are what you want for Summer trade.

Philadelphia and Baltimore.



For Long Wood.

OUR SUCCESS

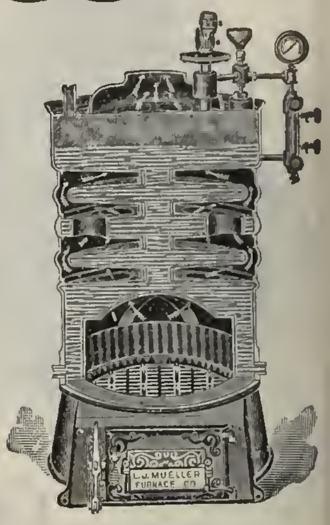
is due to the superior quality of the goods we manufacture.

MUELLER

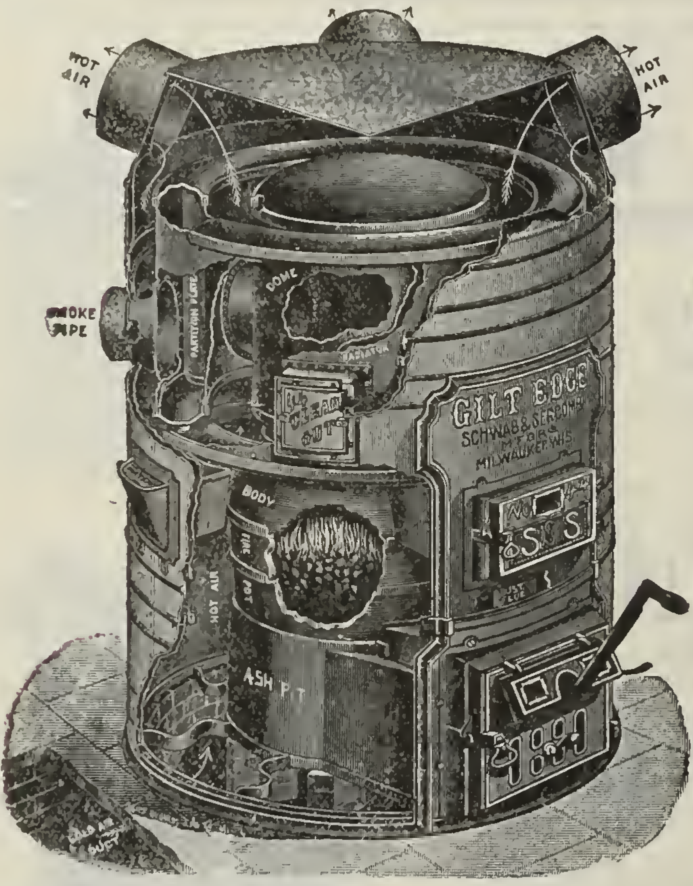
Furnaces and Boilers

Have No Equal.

Write for catalogue and prices. ***Everything in the Heating Line.***


L. J. MUELLER FURNACE CO.

ESTABLISHED 1857 **L. J MUELLER FURNACE CO.,** **190 REED ST., MILWAUKEE, WIS.**

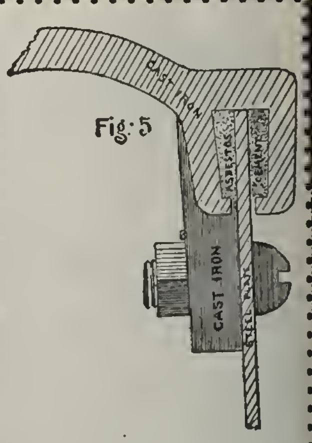


Gilt Edge Warm Air and Combination Heaters

have merits that are all their own. They are made in a large variety of styles and sizes, each adapted especially to a certain class of fuel. Our line is "gilt edge" in every sense of the word. Every furnace we make is correctly made in accordance with right principles, and the price is right. Kindly write us for catalogue.

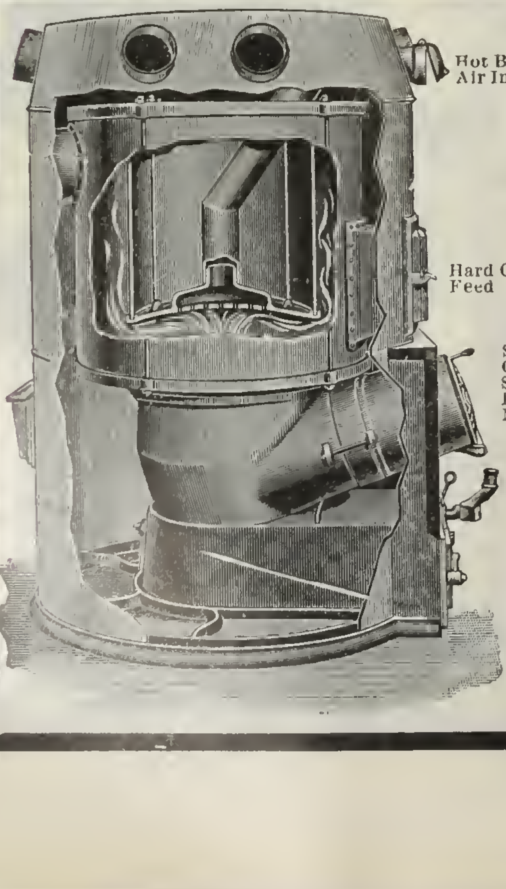
R. J. Schwab & Sons Co.,

Milwaukee, Wis.



Patented.

The Keystone Joint used on Gilt Edge Furnaces is the only permanent gas-tight steel and cast iron joint on the market.


Hot Blast Air Inlet.
Hard Coal Feed
Soft Coal Coking and Smoke-Burning Magazine.

THE PATRIC FURNACE

IS A COMBINATION OF

GOOD THINGS

For the Dealer and User.

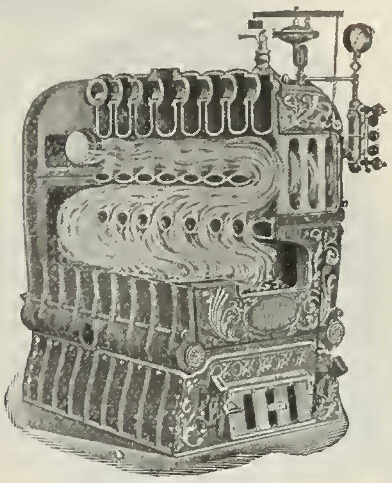
Scientific and Simple in construction. The Coking and Smoke-Burning is a trade-winner. Very economical. Has an efficient Hot-Blast. Exceedingly durable. A success for 29 years. Easy to sell. Easy to operate. Easy to install.

Let us send you a catalogue that tells you all about it.

The Patric Furnace Company,

SPRINGFIELD, OHIO.

The New WALKER BOILER for Steam: for Water



Walker Boiler. 20 Series.

THESE boilers have fully justified our anticipations. This view shows our "20 series" made in eight sizes for either

WATER OR STEAM HEATING.

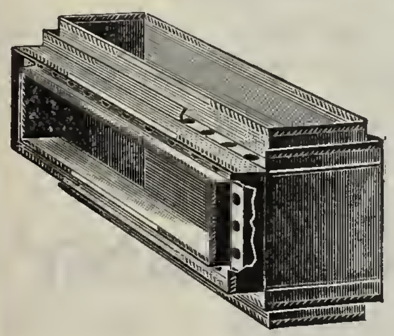
Capacities for WATER 575 to 2150, for STEAM 350 to 1300 square feet direct RADIATION.

Send for Catalogue No. 31 and look it over, then get particulars. Sold on "Honest Rating Plan."

WALKER & PRATT MFG. CO., - 31-35 Union St., Boston, Mass.

FURNACES **PIPE**

EXCELSIOR HEATING SPECIALTIES



WE ARE MAKING

Very Low Prices

on our full line for present and future deliveries and solicit

Your Inquiries

Our Stove Pipe and Elbows, also Furnace Pipe are the Best made.

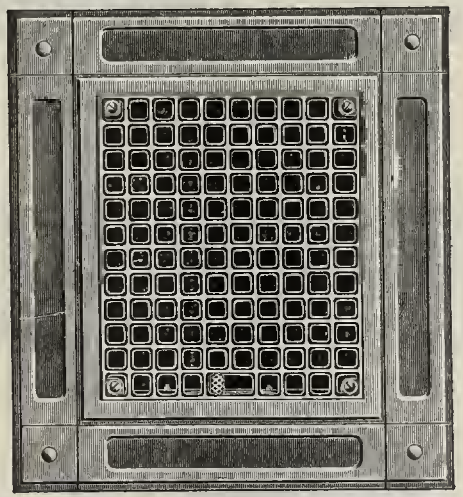
THE EXCELSIOR PARLOR ELBOW.

ELBOWS **REGISTERS**

EXCELSIOR STEEL FURNACE CO.
38-40 W. MONROE ST.-CHICAGO.

H. & C. WROUGHT STEEL REGISTERS

FURNISHED WITH WROUGHT STEEL or WROUGHT BRASS FACE PLATES, AND IN ALL FINISHES.



STRONG, LIGHT, HANDSOME in SIMPLICITY of DESIGN.

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REFRIGERATORS,
BLUE FLAME OIL STOVES,
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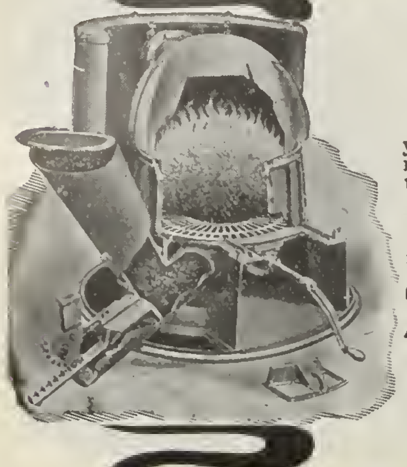
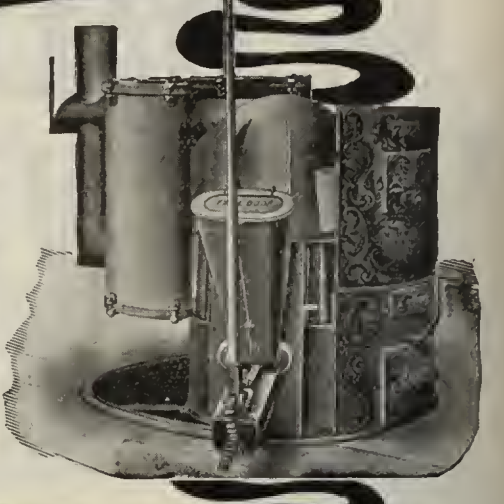
LARGEST JOBBERS
in
NEW ENGLAND.

GAS RANGES,
FURNACES, STOVES,
RANGES AND REPAIRS.

HENRY N. CLARK CO., 56 and 58 UNION ST., **Boston, Mass.**





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Peck=Williamson Underfeed Furnace

you have not the trade and are not making the money you might. Just a pull or two of the lever feeds the new coal from underneath.

The Underfeed Furnace consumes less fuel than any other furnace ever built. The coal is burnt more slowly. All the heat units from it, as well as from the smoke, are utilized and all smoke eliminated.

Our handsome booklet explains its splendid heating qualities and coal saving.

You may have this booklet and our special plans for selling. Ask for booklet about our Laundry Dryer also.

THE PECK-WILLIAMSON COMPANY,
CINCINNATI, OHIO.

The HAXTUN
DEFENDER
GREAT NORTHERN
The SUPERIOR
TABASCO

DON'T

look any further if in search of boilers for steam heat or hot water. The list opposite contains the standards. Send for catalog and get acquainted with them.

KEWANEE BOILER COMPANY
KEWANEE, ILLINOIS.

We believe the "DIGHTON" to be a more durable, better heating Furnace than others that sell for considerably more money.

A good many of our customers who have had opportunity for comparison tell us it requires from one-fourth to one-third less fuel to do an equal amount of work.

DIGHTON FURNACE CO., Taunton, Mass.

SOMETHING NEW.... **Sheet Steel Draft Registers with Screws Complete.**
PATENTED DEC. 17, 1901.

Threads are cut and disk is securely fastened *Without cotter pins or washers,* Yet it is loose or tight as wanted.

SEND FOR PRICES.

STOCK SIZES.

2½ in.	4 in.
3 in.	4⅛ in.
3¼ in.	4½ in.
3½ in.	5¼ in.
3¾ in.	

Any size made to order in quantities.

Manufactured by The H. A. MATTHEWS MFG. CO., Seymour, Conn., U. S. A.

STAMFORD FOUNDRY COMPANY

MAKERS OF

RANGES COOKING AND HEATING STOVES
HOT-AIR AND COMBINATION AIR AND
WATER FURNACES
LAUNDRY STOVES CONFECTIONERS' STOVES
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STAMFORD CONN

BOSTON GAS COOKER.

Low Priced, But Not Cheap.

OVEN 12 x 17 x 12 INSIDE.

One Extra Large Top Burner.
Flush Top,
A Perfect Baker.

RETAILS FOR $6

and gives the dealer an extra large profit.

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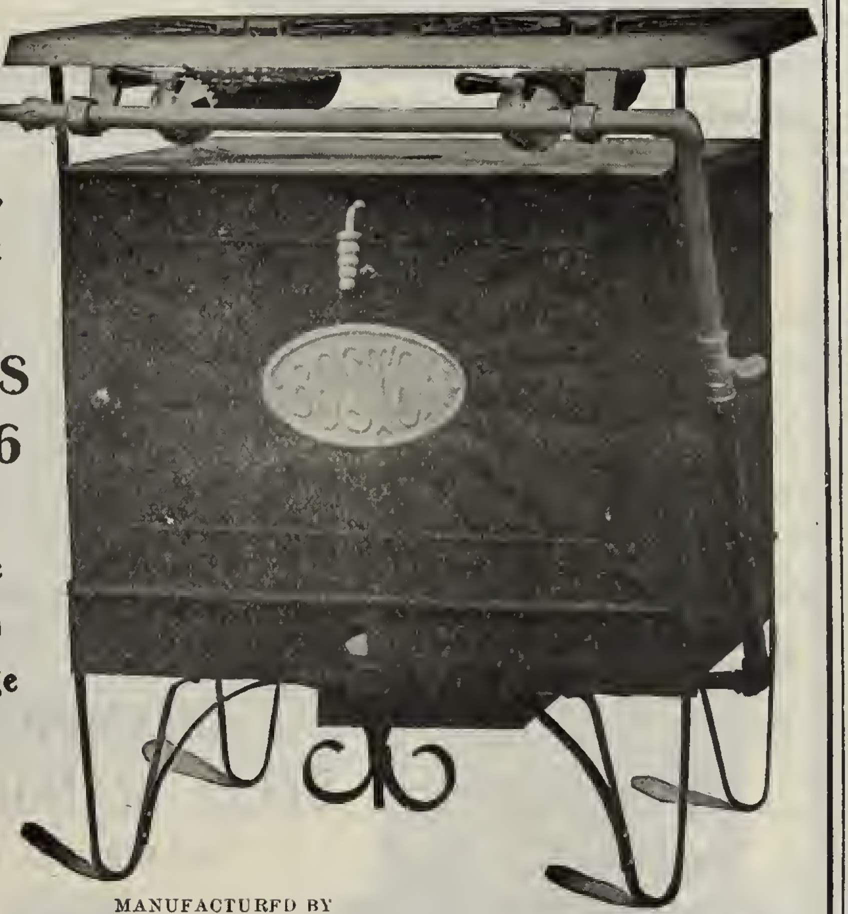

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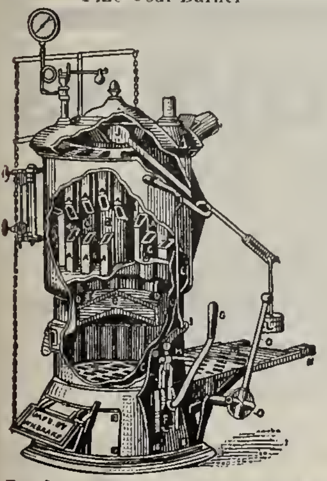
THE S. M. HOWES CO., 40, 42, 44 and 46 Union St., BOSTON, MASS.

Sectional View of the
—TORRID—
Fine Coal Burner



For Steam or Hot Water Heating.

This boiler is made on an entirely new principle and is

The Only Boiler

that will burn Pea or Buckwheat Coal successfully.

SAVES TIME, SAVES MONEY.
RESULTS UNEQUALED.

Send for Descriptive Cuts.

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Factory: Hackettstown, N. J.

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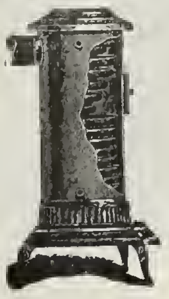

HEATINGBY COMBINATION STOVES AND FURNACES.

Suitable for Large or Small Houses, Stores, Conservatories, Barber Shops, Hotels, etc., etc.

Heat Water Quickly.
Circulation is Positive.
No Joints Inside to Leak.

THE NATIONAL PIPE BENDING CO
160 RIVER ST., NEW HAVEN, CONN.

Have Any Trouble In Securing Your Registers Promptly Last Season?

Let us have your orders this year. We will see that you are taken care of, right.

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REGISTER CO.,
152 Champlain St., CLEVELAND, O.

FOR **MICA**

Sheet, cut or uncut, Powdered and Flake,

WRITE TO

ASHEVILLE MICA CO.,
ASHEVILLE, N. C.

MICA

Specially Prepared for the Stove Trade.

OHIO MICA CO., CANTON, OHIO.

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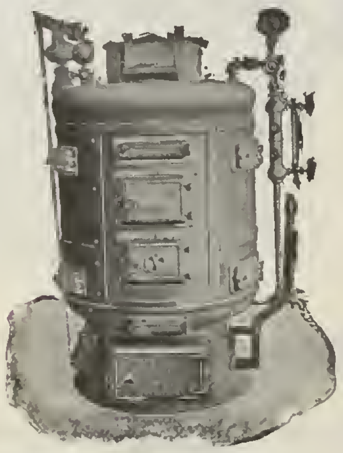
BOILERS and RADIATORS

for Steam and Water Heating.



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LARGE HEATING CAPACITY.
ECONOMIC IN FUEL CONSUMPTION.

Endorsed by the foremost Architects and Heating Engineers.
Write for New Illustrated Catalogue.

Pierce, Butler & Pierce Mfg. Co.,
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The Champion Hot Water Combination Heaters.

They Fit Any Furnace.

Base section when used without ring sections.

Ring Section.

These Heaters are made in five sizes diameter, and from 100 to 700 square feet radiation capacity.

Will heat those cold rooms or an addition to the building. Will increase the capacity of any furnace. Are cheaper than coils and will do more work.

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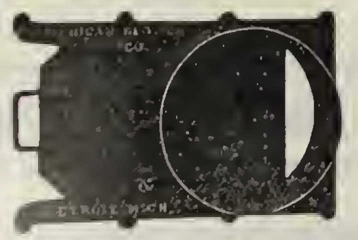
AN OPEN AND SHUT QUESTION.



Do you need a Simple, Effective and Inexpensive Blast Gate?

"A B C" Blast Gates

for closing pipes in exhaust, blast and heating systems are unexcelled.
Send for Price List.

American Blower Co.,
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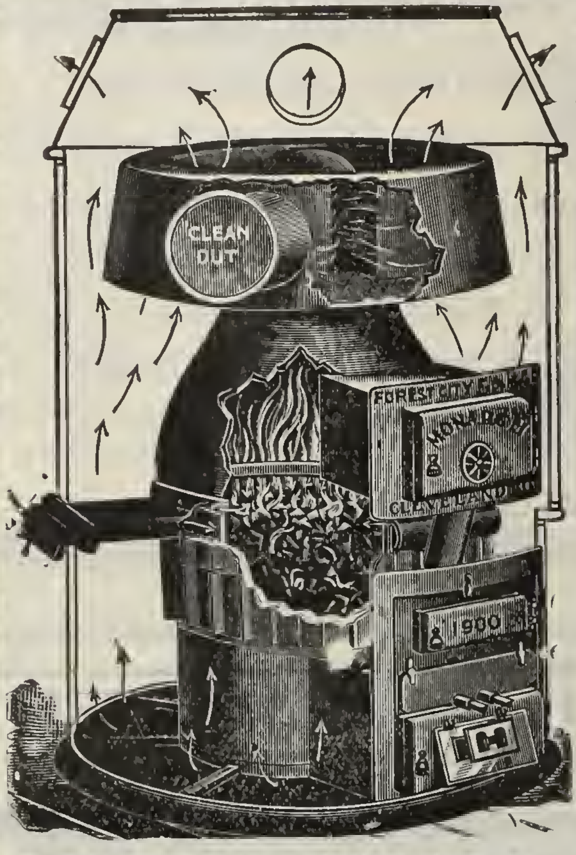
ABC



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All Cast Iron.
For Hard and Soft Coal.

Send for 1902 Catalog and discounts.

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Gray Iron Castings to order. High grade only.

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Double Flue Ranges.

Only Double Flue Ranges in the Market. The Greatest Fuel Saver. Draw-Out Grate.

Handsomely Finished Throughout. Prices Within Reach of all.

CHAMPION STEEL RANGE CO.,
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We are represented by the following houses:

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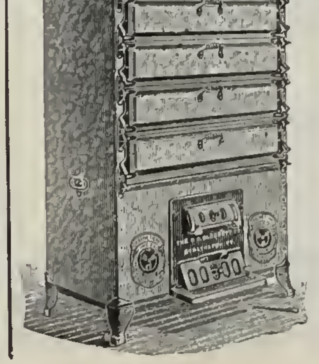

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OVENS FOR Bakers, Confectioners, Hotels, Etc.

Made in all sizes, single and double, for coal, wood, natural or artificial gas.

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Why Sell "THATCHER" Furnaces ?

Second Reason :

BECAUSE THEY STAND USE.

Your reputation suffers as badly as the manufacturer's if you recommend and sell a furnace which is always getting out of order and in constant need of repairs.

"THATCHER" Furnaces are of superior construction and workmanship. They are a comfort to use.

WATCH FOR OUR THIRD REASON.

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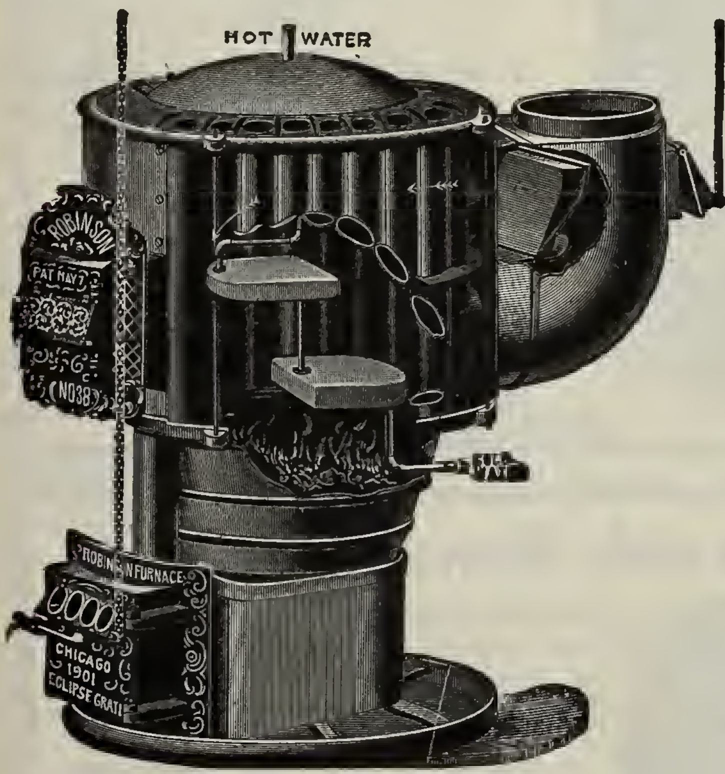
Established 1850.

Warm Air Furnaces, Ranges, Steam and Hot Water Heaters.

Works: Newark, N. J. **240 Water St., New York, N. Y.**



The Robinson Tubular Warm Air Furnaces

give universal satisfaction whereever used.

They are up-to-date in every respect and have many special features not found in other furnaces.

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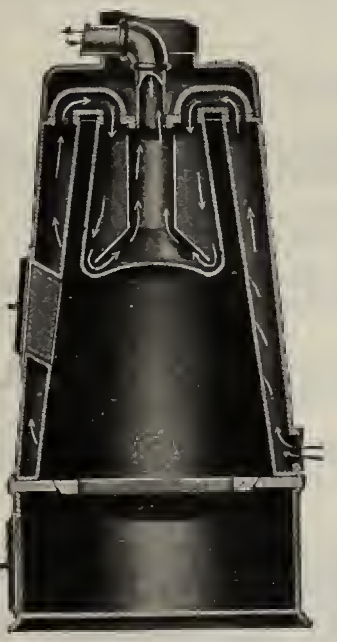

One of the Davis Heaters.

THE war between the coal miners and coal mine owners is the golden opportunity for pushing petroleum and its products for domestic heating which owners of oil wells will not be slow to take advantage of.

The Davis Water Heaters present a broad sheet immediately above the fire over which all the water is constantly passing, thus keeping the sheet cool. Under this large sheet is a fine place to put a petroleum burner, changing the fuel for the heater from coal to oil, retaining its economical character.

Illustrated circular sent promptly on request.

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We cannot make money for ourselves without making money for you. We give the fitter the implements of success and expect him to make judicious use of them. The result is not to be feared. A good fitter and a "WINCHESTER" heater is bound to be a winning partnership. For sale by Smith & Thayer Co., Boston, Mass.; 105 Beekman St., New York.

HEATER.

STARTING RINGS For All Kinds of BLUE FLAME STOVES.

Small size, 40c. per doz. Medium size, 55c. per doz.
Large size, 75c. per doz.

In ordering mention diameter of rings and name of stove.

THE S. M. HOWES CO., 40, 42, 44, 46 Union Street, Boston, Mass.

Fire Brick Linings

—FOR—

Stoves, Ranges, Furnaces.

Eagle Stove Clay.
Incandescent Gas Fuel.

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For Iron and Brass Foundries.

WILLIAMS STOVE LINING CO.,
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Do you want Stoves and Heaters that are easily sold and *STAY SOLD?* We have been very successful in designing patterns for such.

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The Oberle Pipe Support Fittings.

PAT. MAY 28, 1901.

For holding Drain Pipes, Steam Mains, Etc.

Gives the Plumber and Fitter a chance to use the Waste Wrought and Cast Iron Pipe. The head has the regulation pitch of ¼ inch to the foot and up to 2 inches per foot.

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MONCRIEF FURNACES

PORTABLE
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Unequalled in the Great Essentials---Simplicity, Durability, Economy, Capacity, Comfort.

NO BETTER MADE.

Write for catalogue. Special price to the trade.

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The MONCRIEF FURNACE & FOUNDRY COMPANY, ATLANTA, GA.

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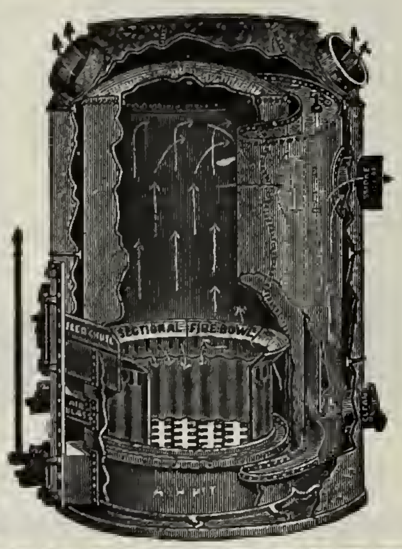

is a trade winner because it has points of merit peculiar to itself that can be found in no other steel furnace. Our new catalogue is now ready to mail and a description of our Hot Air and Hot Water Combination Furnace can be seen in it. We furnish either the cast iron lining or the fire brick at the same price. Our Wood Furnace is called a powerful heater by those who use it.

CATALOGUE FREE.

Lennox Manufacturing Company,
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Chicago Furnace Supply Co.

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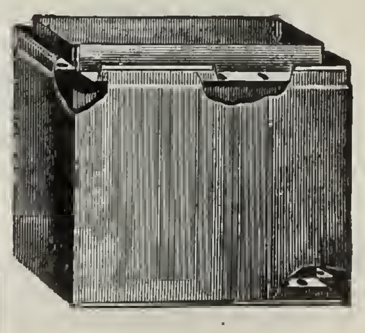

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MANUFACTURERS of **ROUND FURNACE PIPE, ADJUSTABLE ELBOWS, WALL PIPE, REGISTERS, FITTINGS and SUPPLIES.**

The YANKEE Hot Air DAMPER (IMPROVED.)

HOT AIR.

THE YANKEE EXCELS.

Above All—Cheapness—a dealer cannot possibly make dampers as cheaply as we sell the Yankee. Easily put in and taken out of pipes. Stiffest, quickest-working and neatest damper on the market.

It is impossible for this rod when in position to move either way

ROD POINTS: Has wood enameled handle. Wood handle cannot come off. Washer and spring cannot fall off the rod. Same size of holes are punched on each side of pipe. Rod is made of ¼ in. cold-rolled steel and slips into damper very smoothly. **Sample sent to any Dealer without charge.**

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SHEET METAL STAMPING TO ORDER.

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PLACE YOUR CONTRACT NOW

For PLUMBERS' GOODS. **SCREWS** For STOVE TRIMMINGS.

FOR HARDWARE SPECIALTIES.

Manufactured by

HARVEY HUBBELL,
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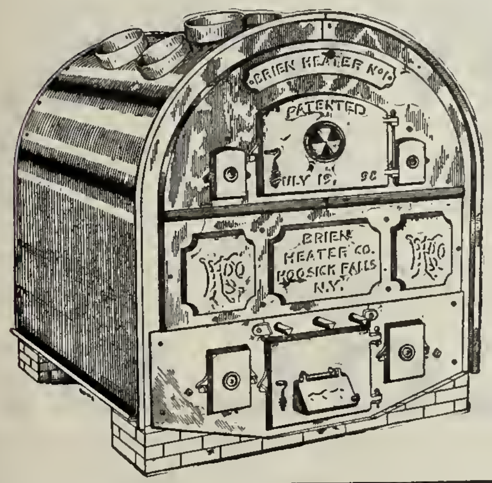

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A perfect, all cast WOOD or COAL burner. There is no other Hot Air Furnace as low down as the "BRIEN."

Write for territory, catalog and prices.

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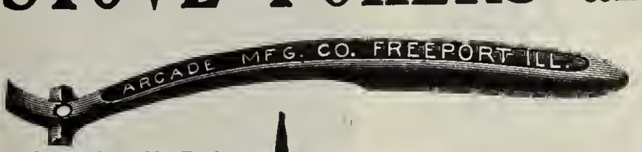
STOVE POKERS and LIFTERS.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No. 3. Light pattern, coppered.
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"Siberian" Poker.
Either bent or straight ends; length, 20 in.

Manufacturers of HARDWARE SPECIALTIES.

WRITE US FOR PRICES.

ARCADE MANUFACTURING CO., - FREEPORT, ILL.

Stove Dealers

will make money and save money by using

Dixon's Graphite Cement.

There is nothing equal to it for repairing fire brick in stoves, furnaces, etc. Let us send you sample and prices.

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MICA EUGENE MUNSELL & CO.
MINERS & IMPORTERS.
NEW YORK. 218 WATER ST.
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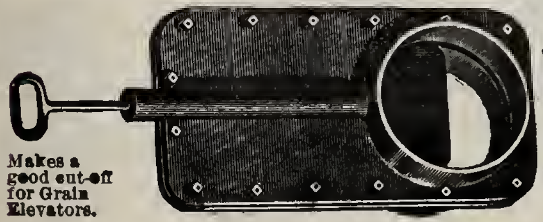

Makes a good cut-off for Grain Elevators.

IMPROVED
WIND-GATE

SEND FOR PRICE-LIST AND DISCOUNT TO

MINER & PECK MFG. CO.
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HANDLE THE BEST.

CHAMPION STOVE CLAY

Is the only brand made of crucible materials, viz.: Imported German Fire Clay and Plumbago from Ceylon.

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STOVE CLAY
BRIDGEPORT, CRUCIBLE CO.
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Dealers are invited to send for circulars.

Packed in neat, attractive, round pasteboard boxes of three sizes: large, medium and small, holding about 10 lbs., 6 lbs. and 2½ lbs., respectively.

ALSO SOLD IN BULK.

Your jobber can furnish the goods.

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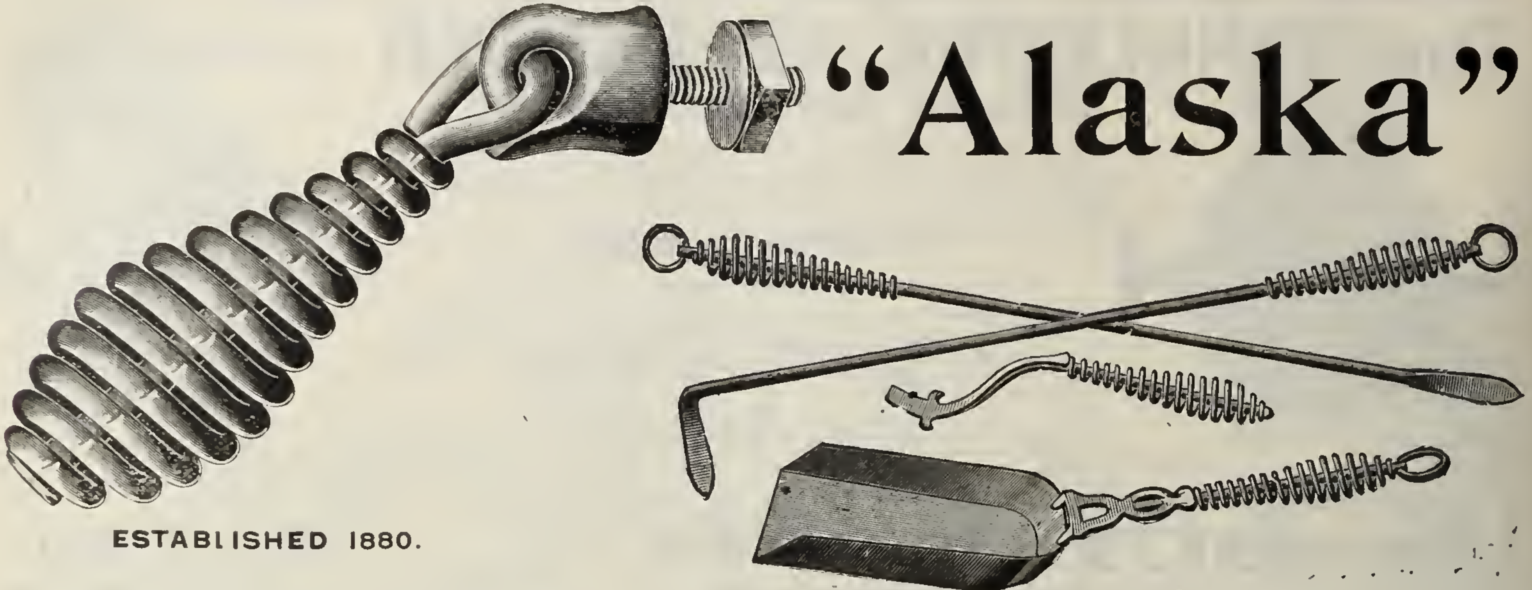

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ESTABLISHED 1880.

Troy Nickel Works,

ALBANY, NEW YORK.

All The Latest Novelties in Stove Trimmings.

ALWAYS COLD.

A Merchant Should Buy

Where he can get the most value in the same quantity of goods. Try our goods for value and lasting qualities. We have prices that bring the business.

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OCT. 25
1892

"O. H." ONE PIECE STOVE PIPE Elbows

Perfectly round and true to size. With long ends, DOUBLE LOCK SEAM in throat or under side of Elbow.

Handsomest, Heaviest and Strongest Stove Pipe Elbow Manufactured.

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FOR STOVES AND HEATERS.

First-class in wood and iron.

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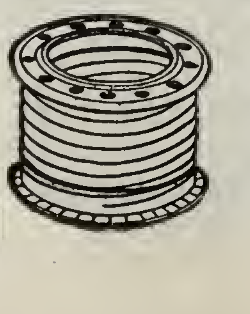

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FOR PARTITIONS AND CEILINGS.

Can easily be adjusted to any thickness of wall, and when screwed up tight against plaster will not work loose and allow the plaster to crumble and fall.

It is perfectly fire-proof, low in price, and never fails to interest customers.

O. K. MANUFACTURING CO.,

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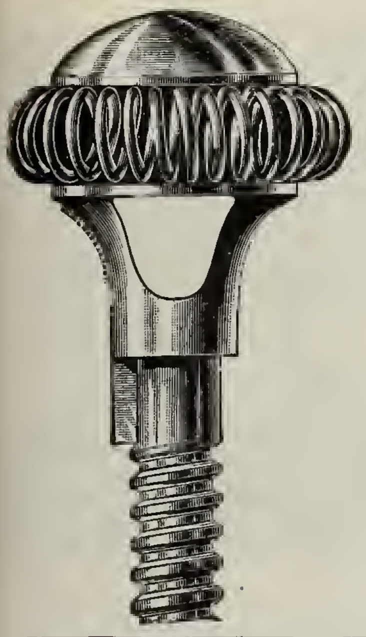

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No. 520 ZERO Screw Knob.

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FIRE-BRICK FACTORY,
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BRANCH STORES:
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ALWAYS IN STOCK.

ALL SIZES OF
Galvanized range boilers, expansion tanks and boilers with copper tube coils inside for heating water by steam.

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For all Stoves, Ranges and Heaters.

PRESBREY STOVE LINING CO.,
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FIRE BRICK
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Stove Brick

Better write at once to

H. E. HESSLER CO.,

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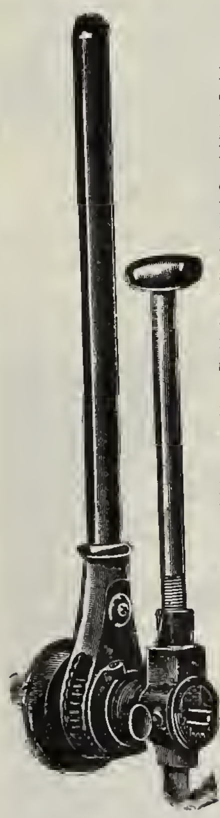
Prices and Quality Right.

The Climax

RATCHET STOCK



Is an indispensable tool for conveniently threading iron pipe in ditches, under floors, in corners, over head, etc. With this tool threads can be cut without removing whole lengths of pipe. This tool is provided with a strong vise which securely grips the pipe and by means of the leading thread the die is forced on pipe and the thread is cut. It is made of malleable iron and steel, and while light in weight, making it convenient to carry, is very strong and rigid. The advantages of this tool make it absolutely indispensable to Plumbers, Steam and Gas Pipe Fitters, Gas and Water Companies, Machinists, etc. It takes standard size dies, which are extra if furnished.

No. 1 threads ¼ to 1 in. pipe, takes 2 or 2½ in. die, $10.00.

No. 2 threads 1 to 2 in. pipe, takes 2½, 3 and 4 in. die, $17.00.

For sale by leading jobbers

Manufactured Solely by

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Plumbers' Force Pumps,
184-186 Third St., Jersey City, N. J.
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Stove Pattern Works
ORIGINAL, ARTISTIC AND PRACTICAL CONSTRUCTION.
Cor. Randolph and Atwater Sts.,
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SHINES FOR ALL

It is the polishers' friend, and will polish anything. Write for free sample to
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Ind'p'l's,
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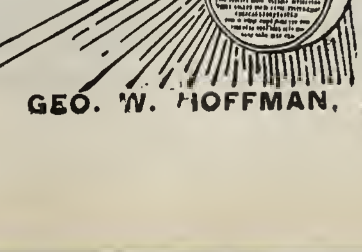

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BOSTON
BRASS
PIPE
HANGER

THE ONLY ONE which requires but one form of holder
Send for Circular.
JOSEPH H. YOUNG.
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Day Metallic Manufacturing Co.,

DETROIT, MICHIGAN,

Manufacturers of

Steel Enamel and Steel Clad

BATH TUBS and HEATERS.

"F. W." FOSTER'S

High and Low
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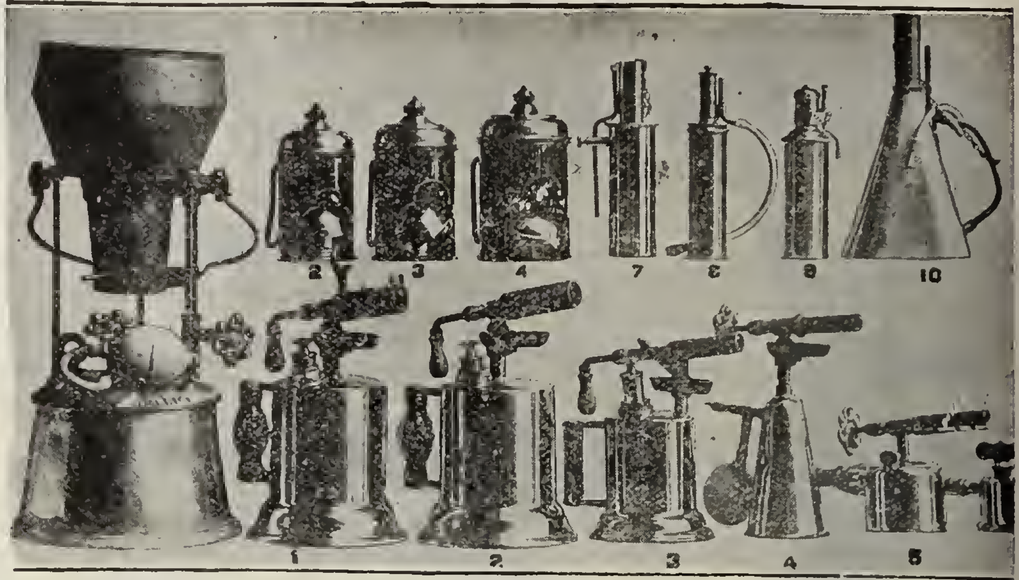

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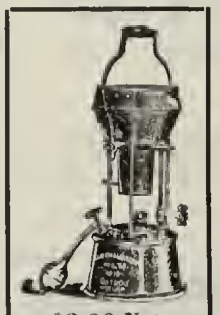

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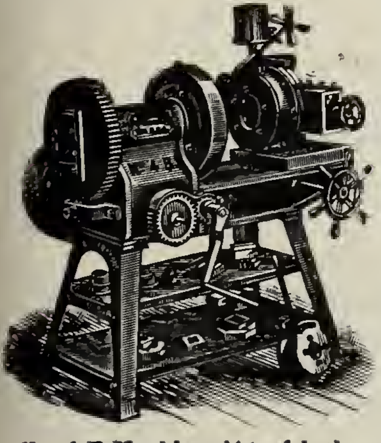

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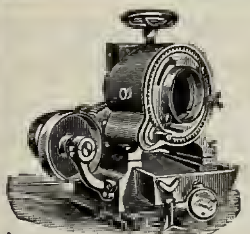

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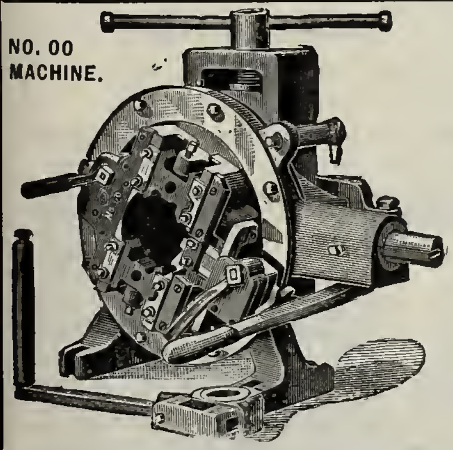

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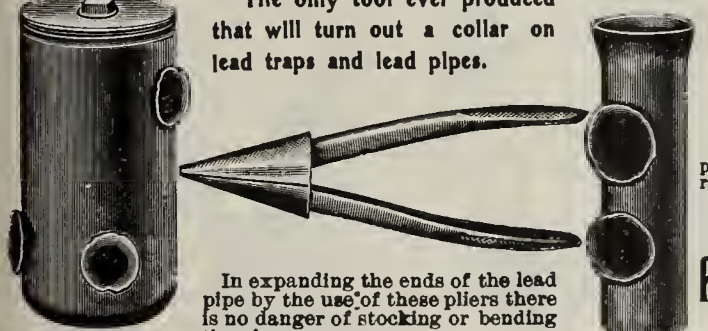

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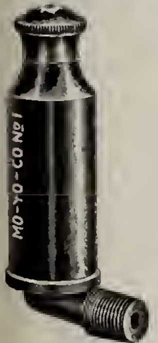

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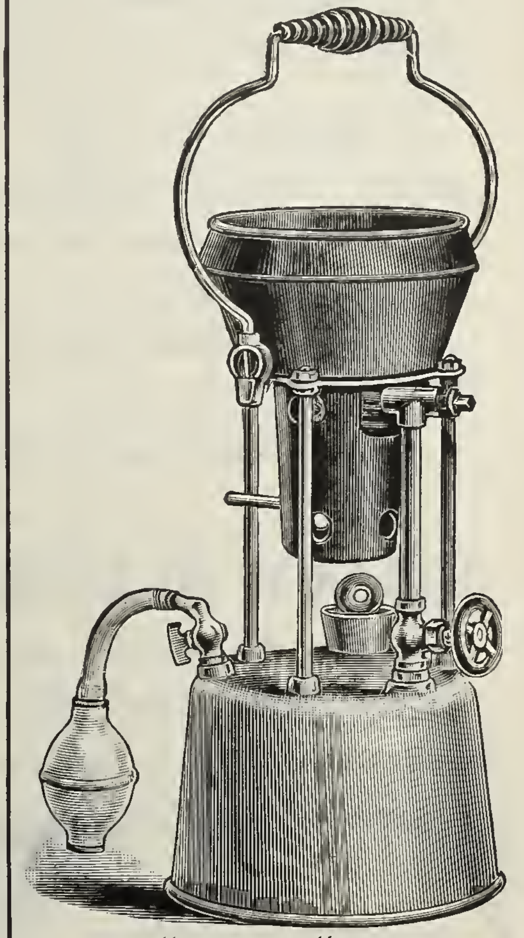

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Safety Air Cock Joints.
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we have fully succeeded in producing *the best furnace made.* Most perfect in every detail. Of the highest efficiency. In operation, positive and reliable. Of substantial construction; combining lightness, strength and durability, at no more cost to the trade than the old style.

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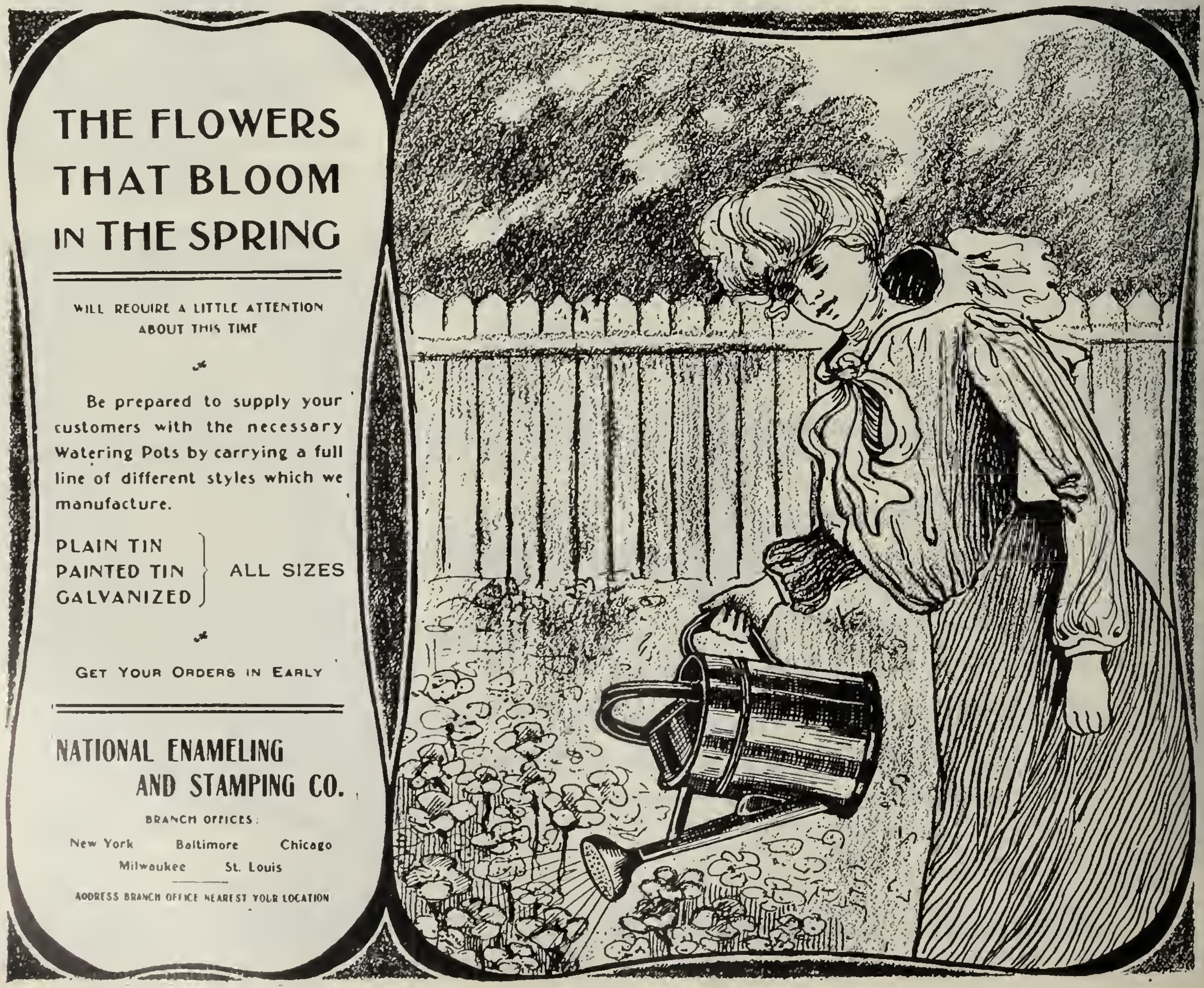

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NEW YORK AND CHICAGO.

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The June Conventions.

That June is peculiarly the convention month among most of those trades to which *The Metal Worker* is devoted has been already indicated by the notices of such meetings which have been presented in our columns. The benefits derived by the coming together of men identified with the same branch of trade are so fully recognized as to secure not only a large attendance, but one composed of representative men, whenever the call for trade conventions is issued. It is not only the discussion of important questions at the meetings, but the opportunity afforded during the social hour for the exchange of views and experiences, that make these meetings of tradesmen of substantial value. The selection of Atlantic City as the place for holding so many of these gatherings this year is calculated to give them additional value. The complete change of scene should have the effect of broadening the views of those who are delegated to legislate for the trades they represent, and it may be reasonably expected that the results of the deliberations of these tradesmen will reflect some of the pleasantness of the surroundings. We wish each body a successful meeting.

The Steam Fitters' Convention.

The first meeting will be that of the National Association of Master Steam and Hot Water Fitters, to be held June 12-14. While the deliberations of this body have for their principal object trade protection, this feature is by no means the only thing that benefits its members. Operating along lines which have been suggested at these meetings, the use of uniform methods has been introduced with great advantage throughout the country, while the effect of these trade discussions has also been seen in the elimination of bad customs. The association is now endeavoring to secure the general use of a uniform contract for the same class of work, as well as to avoid being held to the unreasonable guarantee that was formerly exacted from the heating contractor, and the reservation of the heating and ventilating work from the general contract. The association has been fortunate in its executive officers for a number of years and is entitled to the prosperity which it now enjoys.

The Heating Engineers.

The next important event will be the summer meeting of the American Society of Heating and Ventilating Engineers, who will have a one-day meeting on Monday, June 16. There will be morning, afternoon and evening sessions, devoted to papers furnished by members, to the discussion of topics of interest to this branch of engineering and to the reports of some special committees. The meetings of this society have always attracted considerable interest, and it is entitled to the consideration of all identified with the designing and installation of heating and ventilating apparatus. The society has already done an important work in bringing together engineers engaged in designing such systems and in the production of appliances used in their installation. The published proceedings of the body have become esteemed as valuable works of reference in the libraries of our colleges and scientific institutions. The heating trade generally has profited from the valuable papers on special work which have only been secured as the result of the society's existence. The discussions have covered all branches of heating and are of interest alike to the furnaceman, the steam and hot water heating contractor and those who install forced blast systems for both heating and ventilation. We have no doubt that this summer meeting will equal the former meetings of the society in the value of the papers presented and in the discussion of them.

The Plumbers' Convention.

The third notable gathering is the convention of the National Association of Master Plumbers on June 17-20. These three important meetings coming together at the same place will make Atlantic City long remembered in trade annals. It marks a departure from the custom of holding the plumbers' convention in some large trade center, and introduces the wise innovation of meeting at a pleasure resort where the members can enjoy the exchange of opinions on topics presented for their consideration under unusually pleasant conditions. It also removes the burden of expense for entertainment which heretofore has been laid upon the members of the local association in the convention cities, inasmuch as the place selected for holding the convention affords a continual entertainment for all who attend.

Other Meetings.

The occurrence of the gatherings already mentioned at Atlantic City has afforded opportunity for the meeting at the same place of other important although less conspicuous bodies. June 13 has been selected as the time for holding a conference between the National Committee of the Confederated Supply Associations and the officers and Executive Committee of the National Association of Master Plumbers, and the interests of the heating trade being so closely associated with those who attend these conventions has doubtless been the reason that the manufacturers of heating boilers have selected Atlantic City for holding their regular monthly meeting on the same date.

Peace in South Africa.

By far the most important event of the week is the peaceable settlement of the prolonged and bitter struggle in South Africa. As has been evident from the beginning of the war, the result is the establishment of British supremacy in South Africa. But this has been accomplished only after a conflict involving immense sacrifices on both sides. The Boers have yielded after a gallant struggle of nearly three years' duration, which has commanded the sympathy and admiration of the whole civilized world, including their opponents. The British have granted to them such generous terms of peace as reflect honor upon the victors. It is a settlement that should make for conciliation and the establishment of friendship between the races that heretofore have been antagonistic. It gives ground for the expectation that in the South Africa of the future British and Boer will merge into a common prosperity and progressive civilization. To this country the establishment of peace means the opening up of a favorable market for American products in South Africa. Already our exporters are preparing for a great extension of trade with that country, where a vast quantity of goods of all kinds will be needed immediately to repair the ravages caused by war, and to set the people on their feet again. Moreover, it is a market that will grow indefinitely. With its immense natural wealth, much of which is yet undeveloped, South Africa promises to become, in time, one of the great industrial and commercial centers of the world. There is no doubt that the United States will get its full share of the future trade of that region.

Damage to Freight in Transportation.

Every branch of trade has suffered loss through the rough handling given to goods shipped by the different railroad companies. In another column we present a letter from a large house, centrally located, who ship goods such as are used by many of our readers and handled by the wholesale houses catering for their trade. No tradesman escapes the annoyance of having goods broken, damaged or delayed in transport by rail. Wherever efforts have been made to secure reimbursement for these damages, losses, or delays, the experience has been the same. The delay and " red tape " methods met with are so annoying and exasperating as to have largely discouraged effort in this direction. The railroad companies appear to entertain the opinion that these annoyances, losses and damages are something for which they should not be held responsible. It seems to those who come in contact with the working of these transportation corporations that the average claim department is provided by the companies for the purpose of withholding satisfaction, rather than of affording it speedily. The greatest energy expended in the claim department seems to be devoted entirely to the company's interest in standing off claims rather than to caring for the best interests of their customers. It appears to those who have claims to present that the railroad managers fail to give any attention to their responsibility in this matter. The claim department of a railroad company is usually administered on a totally different plan to the claim departments of other business concerns. In other branches of trade the good will of the customer is an object of close attention, and, on the report of a claim, effort is usually made to adjust it satisfactorily at the earliest possible moment. Houses who pride themselves on the promptness with which they themselves remove all such cause of annoyance are, nevertheless, forced to accept the indifferent attention which the railroad companies give to their claims. This indifference on the part of railroads has forced some large business concerns to employ one or more men to keep up the fight with those corporations in order to secure the justice to which they are entitled. Various trade and business associations have given attention to this annoyance from time to time, and in this age of consolidation, if all kinds of mercantile associations would consolidate their interests in the support of a bureau of justice, and employ skillful and experienced lawyers to prosecute claims on the railroad companies, the cost of the suits would be inconsiderable to the members, while the effects would be sufficient to attract the attention of the railroad companies and bring them to a sense of their duties as carriers of goods for customers.

Immigration at Flood Tide.

A notable result of the present remarkable business prosperity in this country is the tremendous growth in the tide of immigration attracted to our shores. More than 90,000 foreigners were landed at the port of New York last month, making by far the highest monthly record in the statistics of the Immigration Bureau. This makes nearly a quarter of a million immigrants who have entered the principal gateway of the republic since January 1 of this year, as against 180 in the same period last year, an increase of about 35 per cent. Such an inflow has never before occurred in so short a time. Under the circumstances it is a matter for congratulation that the Government has instituted a system for the more careful inspection and scrutiny of immigrants before they are landed, as it is inevitable that, among such a mass of people coming from the other side, there must be a considerable undesirable element. A feature of the present immigration movement that is by no means satisfactory is the statement given out by the immigration officials that a large percentage of the recent comers is composed of an inferior class, who have not sufficient enterprise or energy to travel inland and help build up that portion of the country that needs their presence, but are content to settle down in New York and the cities on the Atlantic seaboard, swelling the already overcrowded ranks of cheap labor and herding in the congested tenement districts of the cities. This country has ever a warm welcome to all comers from over the sea, who are of the right material to make sound and useful American citizens. Honest, vigorous workers, who are willing to go into the country and work on farms or out West to populate the growing sections of the country are wanted and are welcome. But there are already too many unskilled and unenterprising foreigners in our Eastern cities, who know nothing of any trade or handicraft and who are content to eke out a precarious subsistence by doing odd jobs. Such immigrants are not desirable acquisitions. In view of the present flood of immigration, it is to be hoped that the Government officials will enforce the immigration laws firmly and strictly with a view of keeping out, so far as possible, that class of immigrants who are liable to swell the criminal or pauper element in this country.

◆

According to the *Aluminum World* the use of aluminum transmission lines has been steadily growing since 1896, when aluminum cables began to be used at Niagara Falls for conducting the current from the power house at the bottom of the cliff to the reduction works at the top. Aluminum lines have been erected in all sections of the country, but particularly on the Pacific slope, where there has been a remarkable utilization of mountain water powers. Interesting reports are published in the May issue of that journal of the satisfactory service rendered by the aluminum lines used by the Bay Counties Power Company and the Standard Electric Company of San Francisco and by the city of Healdsburg, Cal., as well as the Leavenworth Railroad Company, Walcott, Kan., and the Hartford Electric Light Company, Hartford, Conn.

HOW WILL CONSOLIDATION BENEFIT THE SMALL MANUFACTURER?

The subject of consolidation in the stove manufacturing industry is evidently receiving considerable attention throughout the trade. Presumably the article on this topic by a prominent manufacturer presented in our last issue has inspired the communication from a leading stove man in the eastern section of the country given below. While wishing it to be distinctly understood that we are not to be taken as indorsing the views of our correspondents, we take the opportunity of stating that the columns of *The Metal Worker* are always open to the discussion of any topic of interest to the trade, and that we gladly present any communications that may be sent to us on this particular subject, believing that a full and free discussion will be to the best interests of all concerned. Our correspondent writes as follows:

How Will Consolidation Benefit the Small Manufacturer? Starting with such a question, let us suppose that the small manufacturer has sold out his plant at an agreed price and at terms that were agreeable to him. From that as a starting point, let us consider how he is to be benefited His benefit on the sale of his plant he already has. He knows what that is, for he can count it. But what else there is for him in the future he cannot count so easily. Probably he has employment by the consolidation, if he is one who is considered desirable to run that plant or section of plants. But if he is not so fortunately situated as to be found necessary by the consolidation for the running of the plant or section of plants, he has his time to himself, and can take the needed rest he no doubt has felt he would like, but did not dare, to take while running his own business, for fear that while he rested his competitor would lie awake nights to lay plans to get away his trade and dig pitfalls for him to tumble into. He can now take his ease, assured that when he gets rested he will find his investment fully as well cared for. He has benefited to the extent that he is one of the Board of Directors of the consolidation, and as such has a vote in determining the policy of his former plant along with those of his neighbors, and all that benefits them benefits him. He knows, from the fact of being one of the board, that he must think for them all and need not worry about his competitor, as he always had to do in the past.

If the success of consolidation is his success, he must think for it, but he will not have to do the hard sweating in his thinking that he had to do as an individual manufacturer. He will have others to help him, who, in all probability, have had a larger and wider experience, which will tend to benefit him and awaken in him a new and larger power of mental vision. His duties on the Board of Directors will not take his time to more than a limited extent, if he is not otherwise employed by the consolidation, so that with his experience he can employ his time in any congenial occupation he desires. If the consolidation is a success and the man who sells out is one on whom that responsibility rests to a certain extent, he will be benefited far and above anything he could hope or dream of acquiring if he had sold out to some individuals in the ordinary way in which a business is disposed of. In the consolidation he has a certain voice in the management. In the ordinary way he would, in nine cases out of ten, sell for less to start with and then have nothing to say in the future management of the plant, even though he may hold a mortgage thereon. In one case he knows, because he has a share in making it, how secure his securities are. In the other case his securities may be jeopardized and impoverished, and he would not have the slightest power to prevent it until the crash comes.

Is a voice in the management of his own securities of benefit to the small manufacturer, when he has time to engage in another occupation to add to his income? What small manufacturer can sell his plant so advantageously as he can now to the parties who are forming the proposed consolidation? What large manufacturer can sell his plant so advantageously as he can now to these same gentlemen? What large manufacturer but is tired, so tired, of this everlasting worry over thousands of matters that consolidation would eliminate? The same holds true of the small manufacturer; and with the small manufacturer things are growing worse. The lines are being drawn tighter about him, so that he will not be in it at all some day. To him I would say: Are these benefits of sufficient importance to your life, to your health and to your future happiness to warrant your consideration?

NEW YORK STOVE PRICES ADVANCED.

Evidently the benefits resulting from the work done by the Association of New York Stove Manufacturers for a couple of years, even though it has latterly been out of active existence, have aided materially in promoting conferences of those who have mutual interests to conserve. This is shown in the meeting of manufacturers held in New York City this week, at which the advisability of advancing prices on certain lines of heating stoves was considered. As a natural result of the conditions which now obtain there was no opposition on the part of any of these independent houses to an agreement to advance prices, making some exceptions where they were necessary. Some classes of goods have been sold in the New York market apparently with no other purpose than to supply the demand and without returning a profit to those who manufacture them. This has been due, it is claimed by careful observers, to the fact that no association has existed for some time. The tendency when all act independently and they do not confer even occasionally is to meet prices that are reported to prevail. Those who are most conversant with the aims and results of the old association state very positively that more money was made during its active existence by the local stove trade in New York than either before or since. The outcome of the recent conference is evidence that an association would be very useful and invites another effort at organization. If too much was not attempted there is little room for doubt that the stove manufacturers of this locality could again be united in an association with great benefit to all concerned.

THE GAS AND OIL STOVE TRADE.

Reports from the stove trade in New York City show a marked activity in the movement of gas, oil and gasoline stoves. Naturally, the warm season approaching and the wider familiarity with the use and benefit to be derived from liquid fuel stoves makes this branch of trade active among the out of town dealers. In New York City and the larger towns nearby in which gas can be readily secured at reasonable prices the advertising done by the gas companies to increase the sale of their product is showing a marked effect in the demand for gas stoves. The advancing price of coal in all sections is a further incentive to consumers to give a more appreciative attention to the efforts of the stove dealers to sell gas and oil cooking apparatus. Those handling this class of goods are already having their capacity tested for making prompt shipments.

"THE F. & W. COMPANY FURNACE" is the title of a pamphlet just received from the Fuller & Warren Company, Troy, N. Y., devoted to their 700 Series Hot Air Furnace, which is made with a one-piece cast iron return flue radiator, and adapted for the use of both hard and soft coal, a slight difference in the construction through the arrangement of flue plates being made in the soft coal Furnace. The Furnace is made in four sizes, with 20, 22, 24 and 26 inch grates. The same Furnace is presented in the 300 Series with a steel radiator, with a more extensive variety of sizes, beginning with 16-inch fire pots and ending with fire pots 35 inches in diameter. The Furnaces are provided with a handsome front, labor saving grate and all the conveniences of a high grade Furnace.

ON MOISTENING AIR.

BY IOWA.

Many important and new propositions are being presented through your paper; many very important suggestions are being made along the line of new methods of heating and furnace construction. Stick a peg down whenever a valuable thought or bit of experience comes along. The business of heating is being revolutionized. That item in the Rochester *Free Press* about moistening the air of school houses opens up a wide subject. It strikes at the whole method of ventilation. Note the following points of importance:

Air at a temperature of zero and below will not carry over 1 grain of moisture to the cubic foot. Raised to a temperature of 70 to 80 degrees F. it demands 8 to 10 grains, and everything in the room filled with such air will give up its moisture to the air until the air is satisfied. Here is an important fact which you are to nail to—which must not be forgotten. I dug this fact out of technical works on natural philosophy a number of years ago, and it has been a guide to me ever since. It is in harmony with this fact and under its law that fruit dryers are constructed, also lumber dryers, codfish dryers and heaters for drying the juices out of school teachers and school children. That "15,000,000 cubic feet of air driven through the rooms and halls of the new No. 6 School Building daily" would dry over 10,000 bushels of Baldwin apples every day; but, not having the apples, it hugs the pretty school teachers and dries up their delicate skin and takes the luster out of their eyes, dries up their lungs, throat and nasal passages and wilts them, damages them all around. And it does the same for the children. It has been ruining more weak eyes than all the bad lights architects have ever devised, and causing more headaches and dullness than any other causes. The hardest fight we have had to make in our heating business has been to get people to realize the great importance and value of our method of softening the air by giving it the required moisture.

A REMEDY.

In one of my former articles I spoke of ceiling ventilation for school houses, churches, opera houses, &c., provided with valves for opening and closing. Now I expect I will have another army of "old timers" after me when I deliberately announce that the passing of 15,000,000 cubic feet of air through the school rooms of No. 6 (Rochester) School House is about on a par with the old-time method of the Iroquois Indians, who awhile back were the residents of the Rochester country, who built a big fire under the shelter of a grove and squatted around it, according to the direction of the wind, trying to keep warm. I know I am getting on perilous ground, but I have my back up against a rock and must be attacked from the front. My first defender will be the statement in the said article: "To supply the desirable moisture requires as much horse-power as is required for supplying pure air." The condition of the Rochester people is that they spend twice as much for coal as they ought to to warm their building. They have to spend as much more to keep their handsome school teachers and beautiful children from being desiccated. In most towns where they have these fresh air, multi-million cubic feet heaters, they let the teachers and scholars desiccate, and when one set of teachers are dried up they introduce fresh girls to take their places, while the romping boys and girls manage to partially recuperate in vacations, &c., and by staying out of school when sick long enough to take in sufficient moisture and freshen up for another process of drying.

VENTILATION.

How can these evils be remedied? I make the following suggestions: In all assembly room heating and in the heating of school houses, the thing to be accomplished is to get rid of the foul air in the upper half of the room. In an opera house, when the audience has been gathered for 30 minutes, the air in the upper galleries becomes almost unbearable, while the air in the lower half of the room is comparatively good. All of the fresh air coming into the room goes to the floors. All of the bad air from breathing and from foul bodies being heated to near 100 degrees goes toward the ceiling. This is the body of air to get rid of. The carbonic acid gas mingling with it does not attempt to come to the floor. Valved ceiling ventilation comes in here. It does the work, and one sniff of the air that passes through one of these ceiling ventilators will cure the worst case of old-fogy nonsense that can be found.

Here the "rotary man" comes in again. Instead of using "15,000,000 cubic feet of air a day" in that Rochester school house, he would use the "rotary air" movement to warm the building, and only admit fresh air, moistened, during the session of the school. By the use of the valved ceiling ventilation this enormous amount of fresh air could be further enormously reduced and the conditions all along the line be greatly improved. These suggestions are not costing anybody anything, and the probabilities are the "15,000,000 cubic feet" process will go on indefinitely.

Round Oak Year Book for 1902.

"Distinctively Beckwithian" must be the judgment of every lover of fine catalogue work into whose hands may come a copy of the Round Oak Year Book for 1902, just issued by the Estate of P. D. Beckwith, Dowagiac, Mich. Every detail of this publication reveals the artist and the accomplished book maker. It fully meets the expectations of those who have observed the high standard of the trade literature issued by this progressive establishment. The size adopted, 7½ x 9 inches, makes it convenient to handle and sufficiently large to permit the use of engravings of the liberal proportions which are desirable in the case of some goods. The leaves are sewed together instead of being wired, so that the book lies flat when opened at any place. Thick black paper is used for the cover, this color making a most effective background for illustration and lettering. The front cover bears an illustration of Doe-Wah-Jack, the Beckwith trade-mark. As represented here, he is a noble specimen of the Indian race, posing magnificently in the light of a fire which casts a ruddy glow over his statuesque form. The lettering is silver. The engravings used in the book are exquisite reproductions of photographs, which, with few exceptions, are placed on the right hand page, with descriptions or price-lists on the opposite page.

In the arrangement of the contents, heating stoves are given first place, as would naturally be expected of the manufacturers of the Round Oak. Next come steel ranges, which are followed by cast ranges and cast cooking stoves. Furnaces bring up the rear. The heating stoves illustrated comprise the original Round Oak, with the new hot blast for the perfect combustion of soft coal, with magazine for hard coal and with extra half section for additional heating surface; the Round Oak room heater, with and without casing; the new Beckwith hot blast for soft coal and the new Beckwith air tight for wood. The Round Oak planished steel range, represented as the highest type of this construction, is shown in a variety of styles.

The department of cast cooking goods describes the Round Oak cast range, with six holes; the Round Oak kitchener, with six holes; the Round Oak Standard range, with six holes; the Round Oak special range, with four holes; the Round Oak Standard cook and the Round Oak cook. The furnace department gives numerous illustrations and full details relative to Round Oak furnaces for warm air heating and combination heaters.

In an accompanying circular Manager Fred. E. Lee states that the sales of the genuine Round Oak up to March 15, 1902, were very much in excess of any previous year, also that the sales of the Round Oak furnace were nearly double those of 1901 at the corresponding date. He calls particular attention to the new Hot Blast, characterizing it as a distinct step forward in the manufacture of this class of heating stove.

THE READING STOVE WORKS, Reading, Pa., have decided to increase their capital stock from $400,000 to $600,000 for the purpose of extending the plant and improving the financial policy.

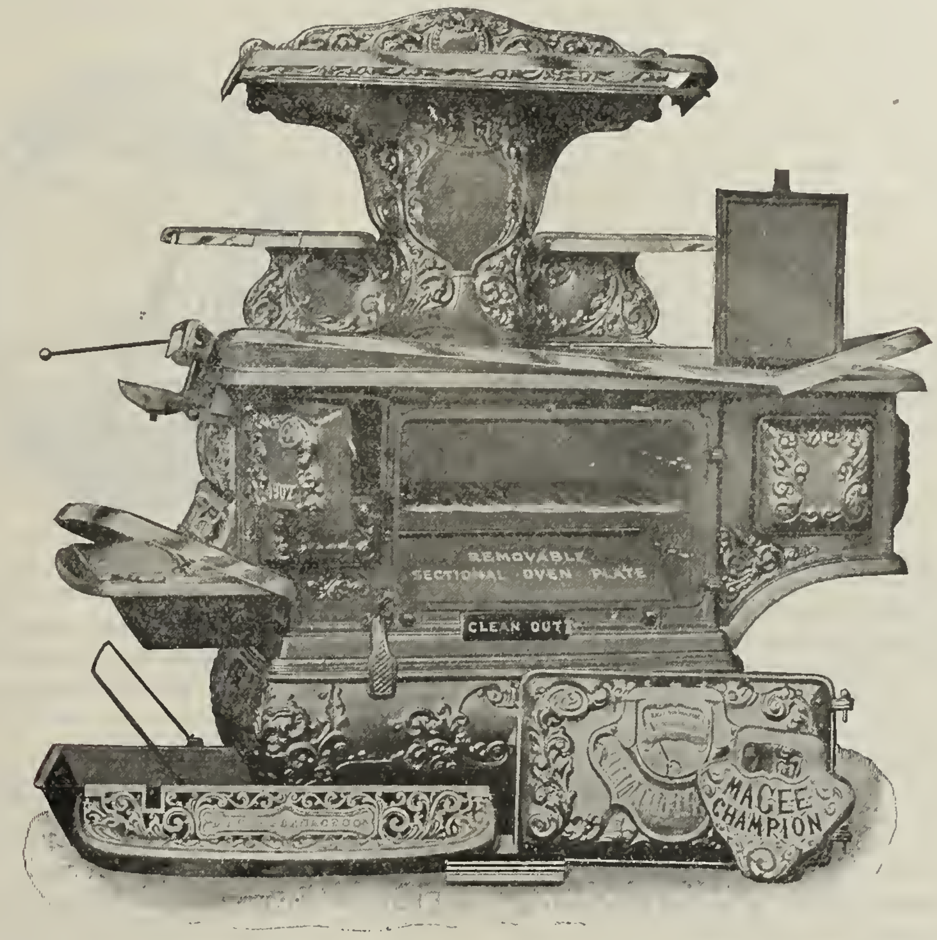
SETTING FURNACES.

BY N. R. R.

Much has been said and written in *The Metal Worker* about hot air furnaces and their location. I would like to say that when I can set a low furnace with a pitch of at least 1½ inches to the foot in the hot air pipe, a generous cold air inlet from the north or west side of the building, and registers having openings of an area greater than the area of the hot air pipe, with the hot air pipe running directly from an elbow in the top of the furnace, I seldom fail in giving satisfaction to my customer. When there is not sufficient hight to give this amount of pitch to the hot air pipes I always place the furnace in a pit. The old McGregor furnaces, placed according to the above rules, always gave satisfaction.

The Magee Champion Range.

One of the latest additions to the already extensive line of specialties turned out by the Magee Furnace Company, 32 to 38 Union street, Boston, Mass., is the handsome range offered under the name of Magee Champion and illustrated, partially dismounted, in the accompanying engraving. Constructively it has a large round cornered fire pot, lined with fire brick, for burning coal, or heavy corrugated cast iron for burning wood. There are four styles of grate which can be used. It has a special flue system, which is claimed to give an even distribution of heat around the entire oven, while an extra flue at the back permits the use of a top flue the full size of the oven, thus rendering equally useful all the boiler holes in the top surface of the stove. The fresh air is continuously carried into the oven through perforations in the door and passes out through holes in the rear of the oven, and thence to the chimney. The oven door is fitted with a heat indicator, thus showing at a glance the temperature within. The illustration which we present herewith shows how easily the nickeled parts can be removed for cleaning or for blacking the range. It also shows the removable bottom oven plate, which is made in two pieces, with locked square edged plates always flat and level. The ornamentation is rich and effective and the high shelf brackets have extension slides, shown in the engraving, which are very useful when large dishes or platters are to be kept warm. Special reference is made by the manufacturers to the patent flush top reservoir, which is heated by a cast flue, the point being made that the water can be heated very quickly and perfect operation of the oven maintained. The company have issued a neat eight-page folder calling attention to the Magee Champion and showing some of the special features incorporated in its construction, as well as several of the varieties in which it is offered to the trade.



The Magee Champion Range Shown Partially Dismounted.

S. Obermayer Company.

"Foundry Facings" is the title of a short treatise by the S. Obermayer Company of Cincinnati. The most common facing is sea coal or bituminous facing. This is the only facing known which is not put on the face of the mold, but is mixed with the sand in the proportion of one shovelful of coal to 10 or 20 of sand. This mixture is placed nearest the surface of the mold in order to break up the particles of sand, which is then not so liable to fuse when the metal is run in. The coal cokes and passages are formed for the escape of the gases. This leaves the sand in a separated condition, so that when the casting is cooled the particles of sand will drop off. All other facings are dusted on the mold, applied with the hand or with a camel's hair brush, and can be used wet or dry, as the work may require. In order to produce a good casting a facing or blacking is needed that will close up the pores of sand on the face of the mold and so produce a smooth surface or veneer. The best material for this is what is termed plumbago or silver lead. Mineral facing is made from an anthracite coal or low graphite carbons, and is used on work when a particularly smooth surface is not required.

At a recent meeting of the stockholders of the Summit Stove Works, Geneva, N. Y., it was voted to increase the capital stock from $75,000 to $100,000. The number of directors was increased to seven, as follows: Henry A. Wheat, J. J. Maxwell, Roger Hogan, J. F. Quay, William Reid and Charles H. Huke of Geneva, and G. W. Loomis of Rochester.

The Southern Stove Works.

We understand that the Southern Stove Works of Richmond, Va., are meeting with a very gratifying demand for their specialties, and that orders have already been booked which will keep their plant running very nearly full capacity for the balance of the year. They are bringing out a new "Air Tight" stove, embodying features which the makers are confident will render it popular with the trade. Heretofore the company have confined their productions to standard stoves, but are now giving attention to sheet steel stoves and ranges and are bringing out a full line of oil and gas stoves. The equipment for this line of their business is of the very latest design, the necessary dies and machinery having been manufactured especially for them by the E. W. Bliss Company of Brooklyn, N. Y.

The plant which the company now occupy covers 5 acres of ground located at the corner of Hermitage and Leigh streets, and consists of five brick structures. The main building, which is used for storage and mounting purposes, is 120 x 240 feet, the foundry is 86 x 200 feet, and the three remaining buildings average about 30 x 50 feet. Electricity is used for generating power and lighting purposes. The receiving and shipping facilities are exceptional, as cars can be run directly into and out of the works. The tracks of the Seaboard Air Line Railroad extend along the full length of the north side of the works, and the tracks of the Richmond, Fredericksburg & Potomac Railroad extend on the south side, thus giving ready communication to all parts of the country.

The Southern Stove Works were for a considerable time an incorporated concern, when they were purchased some years ago by the present owners, Thomas Atkinson and Stanhope Bolling, who developed the business to a point demanding increased facilities. It is due to this fact that the works were removed from the old location on Main street to the plot of ground referred to above.

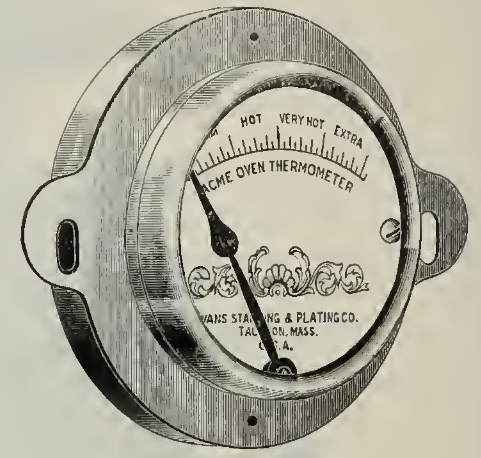
Estate Gas Appliances.

The merits of the leading lines of Estate gas cooking appliances, embracing ranges, heaters, hot plates, &c., are set forth in convincing style in an attractive catalogue which has been issued by F. & L. Kahn & Bros. of Hamilton, Ohio. The goods are presented in such variety as to meet the requirements of an exacting trade, and are of special interest just at this season, when coal is becoming scarce and the torrid weather naturally turns the thoughts of the housewife to the conveniences of gas as a fuel for cooking. The gas ranges are represented by the Select Estate, made in several varieties, one style being adapted for hotel requirements, as it can be furnished with two, three or four large single ovens or with four, six or eight double ovens, and with any combination of the large single or double ovens that may be desired; the Superb Estate, shown in series A, B and C; the Climax Estate; the Economic Estate; the People's Estate, the latter being of cast iron, and the Cottage Estate, a new low priced range of attractive exterior.

For burning natural gas the company offer the Queen Estate range, made entirely of cast iron and embodying many interesting features. Other goods include the Cooker Chief, A and B series; the Early Bird, the Gem and the Duplex Estate Cooker, mounted on high legs, for artificial gas. The Golden Estate and the Queen Estate are combination gas and coal ranges, the latter, it is said, being something new in the way of a medium priced high grade range. Another combination coal and gas range is the Star Estate. Broilers, hot plates, roasters, urns, Victor gas grates, Challenge, Peerless and Hero radiators, for using artificial and natural gas; the People's heater, as well as open front and sheet iron cylinder heaters, are among the other goods illustrated and described. What the company refer to as a "revolution in heating with gas" is a construction designated as the Triple Effect. This is what appears to be a cabinet base, on which are mounted five sheet iron pipes, presenting much the appearance of a radiator.

The Acme Oven Thermometer.

As the use of the oven thermometer is more generally understood by the housewife, the demand for these devices by stove manufacturers has increased, and whereas a few years ago this branch of industry was comparatively small, there are now several manufacturing concerns that have devoted considerable energy to their production. In the accompanying illustration we show the Acme oven thermometer, made by the Evans Stamping & Plating Company, Taunton, Mass. These thermometers are substantially and neatly made, and when attached to an oven door are not only a thing of utility, but with their nickel plated finish and white porcelain dial, contribute, if not beauty, at least a pleasing contrast with their surroundings. They are substantially made so that the slamming of the oven door does not affect their operation, nor are they likely to get out of order in shipment. The parts are so constructed that they do not rust nor corrode when carried in stock. They are put up by the company in separate boxes and sealed, making a neat package. It is claimed that this indicator enables the cook to avoid spoiling anything that she may prepare, by knowing exactly the condition of the oven and not guessing, so that when cakes, puddings or other food are put in the oven for cooking the oven is at the right temperature to do the cooking to the best advantage.



The Acme Oven Thermometer.

A Foundry Supply Catalogue.

The Osborn Mfg. Company, 1331 Hamilton street, Cleveland, Ohio, makers of foundry supplies, brushes and brooms, have just issued their illustrated catalogue No. 102, containing 100 pages. The publication covers the wide variety of goods manufactured by the concern, including the Acme steel wire casting brushes, gear brushes, Economy steel wire wheel brushes, circular scratch and satin finish brushes, Osborn and Tampico wheel brushes, molders' soft dusters or dry brushes, molders' hard brushes, platers' brushes, hand scratch and fine steel wire brushes for all purposes, furnace and heater brushes, flue brushes in steel and brass wire, pipe brushes for removing sand, &c., from the inside of cast iron pipe; hard iron stars for tumbling, and molders' wooden sprues, bench and floor rammers, long brooms and whisks, steel wire push and scrubbing brooms, dustless floor and carpet brushes, counter or bench dusters and scrub brushes. These are followed by foundry mallets of rawhide, rubber head draw hooks, molders' hand bellows, Lightning foundry sprayers, shovels, coal scoops, coal forks, foundry riddles, sand and coal screens, wooden and galvanized iron pails, foundry sprinklers, wrought iron chaplets and chaplet stems, Eureka snap flasks and ribbed and beveled flasks in a large number of sizes. The latter portion of the catalogue is devoted to furnace lamps and hand torches, vapor and oil foundry torches, steel tubular barrels, stamped steel ladle bowls and corundum wheels. Special mention is made of the company's Standard grinding machines, made in several sizes and fitted with babbitted bearings, which are equipped with oiling rings and protected from dust.

They also manufacture a line of countershafts with patent belt shifters. A variety of paint, varnish, stencil and marking brushes occupy the closing pages of the catalogue, which is furnished with an alphabetical index.

ANOTHER THING A FURNACEMAN SHOULD KNOW.

BY M. A. E.

" *Wisdom cannot give rules for acting in all cases, but it can give rules for using judgment in special cases.*"

At the outset we wish it clearly understood that we are not of the opinion that our roost is one upon which the Bird of Wisdom perches continually. In fact, for some time we have not felt conscious of his weight. Time was, years ago, when, tugging on the far end of a die stock and squeezing the handles of dull pipe tongs for our daily bread, we mused on our knowledge of the art of warming, and were strong in the belief that we had it "all" nailed down. Events have combined to kick that notion out of us, and we are now studying patiently in the School of Experience, seeking rules for using judgment, with graduation day not yet in sight.

We have discovered, as no doubt most folks in the heating business have also discovered, that each day we live brings its problem to solve. It may even be one that has, to all intents and purposes, already been solved; yet the case calls for a different application. The previous solution cannot be taken as a rule, and can only serve as a guide for using judgment.

One of the particular branches of the heating business which has impressed us with the quantity and quality of its problems is the combination hot air and hot water system. We are not hot air furnacemen, but have been called on in a great number of cases to install the hot water end of such plants. The experience gained in this work, we think, justifies us in saying that any ordinary disciple of the art who jumps in and imagines he has a cinch coming to him will get a lot of heavy jolts.

When we first took hold we found that our conception of a hot air furnace and the hot air man's conception of hot water generators and radiation combined in about the same way that oil and water mix. After a number of cases were put through, however, we understood each other better, and both learned to accomplish with reasonable accuracy what we set out to do. We made mistakes and paid for them; sometimes in cash, sometimes it took the form of cash accompanied with abuse. It always cost us something, until such time as we had absorbed experience. Then we gave more time to thinking before we started to work.

One thing we established, to our own satisfaction at least, which is that combination heating, up to a certain limit, is a perfectly successful method of warming buildings. Since that time we have derived profit from our work. We are sure that others have also made money out of this branch of heating, but not until they had gone through the mill, or had secured the services of one who had. In addition to our own mistakes we had the opportunity of studying some made by others. Being modest, we would sooner talk about the others' mistakes; hence anything referred to hereafter will be understood to be the other fellows'.

One of the first startling intimations we had of there being something to think about in combination heating was through being called in to visit a job, about which the complaint was "no heat from the radiators." We found, when we arrived at the house, that the fire in the furnace was good and fairly bright, running under very easy draft. The air coming from the registers was fully as hot as we would care to have it; the radiators almost cold. The owner was enthusiastic over the furnace and the air, but for the radiators and piping he had no good word. We examined the latter part of the system very carefully, found the radiation fully equal to the requirements of the various rooms—that is, it would be, under normal conditions of a hot water job; the piping in the cellar was well proportioned and properly graded and things mechanical in good shape generally. We considered for some little time and finally resolved to sleep over it; which we did.

We decided by the following morning to call in a furnaceman, through whom we learned that only one-half the air capacity of the furnace was in use, which, as he explained, accounted for the easy firing. It was then we were struck with an idea. From the owner we procured a catalogue of the furnace and found that this particular size was rated to carry 350 square feet of hot water radiation. After adding the different radiator surfaces together and taking into account the exposed piping in the cellar, also the risers, we found there was considerably more than 350 square feet in the total. It did not take us long to draw the inference. The job was improved very much by cutting out three radiators and adding two 10-inch hot air pipes to it. It is by no means evenly balanced yet, but the owner would spend no more money on it.

In discussing the job with the owner we asked him how it came that the furnaceman had put in so many radiators, and he told us it was because he himself had asked for them. He had heard so much about hot water and its great merit as a heating agent that he conceived the idea of warming at least one-half of the house with radiators. The furnaceman had interposed no objections of any kind, but had estimated on the work and been given the order. He had taken the owner to see another job he had done in a different part of the city, which, luckily, was balanced and worked well. This fact led to the prompt closing of the job at a good price.

Up to the time of the above difficulty the furnaceman had been an enthusiastic exponent of combination work and had indeed posed as an authority on the subject. But at the time we were called in you could not get him to approach within a dozen blocks of this house, and he spent much time and devoted much chin action to "knocking." The funny part of it is he cannot give you his reason for knocking, beyond that this job did not work; neither can he give the reason for the first one being successful.

Two other furnacemen were called in to examine this job, and, from the owner's story, we gather that they merely condemned the hot water work. They praised the hot air work mildly and pointed out where it might have been better. Both of them were emphatic and in accord on one point, that combination heating was a fallacy. One of them backed this opinion still further by citing a case he had just been to see where it had "frozen 'em out."

The following day or so we had the pleasure of overhauling this same job. The main return at a point about 5 feet away from the furnace had very foolishly been dropped into the cold air box (wood), and then connected to the generator in the furnace. A cold snap had arrived at night while the fire was low and nipped the pipe. This was afterward carried outside the box and inside the casing of the furnace covered with asbestos.

These are merely samples of our adventures in combination work, but it was from just such cases we learned the most. From these, and from our own work, we gradually gleaned such experience as enabled us to avoid expensive errors. Even yet we do not claim to have reached the gilded degree of perfection, wherein we are proof against mistakes. That stage is peculiarly reserved for those who furnish rules for acting in all cases, who calmly assure you that they never have any trouble with their work.

To those who are starting out in combination work, also to those who have already started, but have grown faint hearted because of indifferent success with it, we beg to offer a very few simple suggestions which we ourselves follow to the letter.

Consider each job of combination work as a special case and study it from all points thoroughly before ordering the goods.

Do not look on any two houses as being exactly alike in their heating requirements. There's a difference somewhere, and you'll discover it if you take the time to look.

In consulting a furnace catalogue—that is, a combination furnace catalogue—we have seldom seen the air capacity of the furnaces given. Presuming that your experience in that respect is the same as ours, we would suggest that you ascertain this capacity, and also ascertain if it has been computed by the manufacturers with proper allowance made for the fact that it is a combination furnace and not a hot air furnace, pure and simple. There's quite a difference between the two, so don't let it be found out at your expense.

Put the figures down on your estimate sheet; good big plain ones; also put down opposite them the amount of hot water radiation the furnace will carry. Work the problem out in such a way that you will not use a larger proportion of hot water radiation than hot air. If anything, favor the hot water side by using slightly less. Our experience does not recall to us a case in which this order of things had to be reversed.

Consider every foot of hot water piping as radiating surface and count it as such in your total.

All the features of regular hot water heating work in regard to proportioning of mains, grading the same, manner of connecting to radiators, covering of mains, &c., enter into this work.

To those who have done nothing of this kind as yet we would earnestly recommend that they work in conjunction with some fitter who understands good work and will take the responsibility of the piping off their shoulders. After they have carried this along for some time they may feel that they have learned enough to have some judgment and may essay to stand alone. Whether they can or not won't take them long to find out.

ODD PLATES.

We have received from C. W. Curtis of the Sill Stove Works, Rochester, N. Y., an interesting document which he found among the papers of his grandfather, who was a blacksmith. It bears date of August 24, 1834, and conveys to William Curtis of Clinton Township the right to use a composition controlled by a Mr. Freeman for working iron and steel and tempering edged tools. The formula is given and also directions for using the composition. The document consists of a piece of paper, measuring about 8 x 10 inches, and is partially printed and partially written. It is exceedingly primitive in its general make up and is in striking contrast to the legal documents of the present day.

The Wheeling Stove & Range Works is the name of a company recently incorporated at Wheeling, W. Va., with a capital stock of $100,000, for the purpose of manufacturing, buying, selling and dealing in Stoves, &c. The incorporators include W. E. Whitaker, Alexander Glass, G. C. Reppetto, A. C. Whitaker and N. P. Whitaker.

At a recent meeting of the stockholders of the Duffy-Trowbridge Stove Mfg. Company, held at Hannibal, Mo., directors were elected as follows: James Duffy, C. H. Trowbridge, C. A. Trowbridge, George W. Dulany and W. F. Chamberlain.

Charles C. Heath & Co., proprietors of the Ideal Stove Works, are distributing from their Philadelphia house, 136 and 138 North Second street, coupons bearing the suggestive title "Are You Riding Free?" These coupons are sent to customers and entitle the holder to a 1000-mile mileage book over any railroad in the United States issuing them when returned to the company's Philadelphia branch accompanied by 200 premium shipping tags. These tags the company attach to all Repair shipments made by them, whether large or small. This is a novel method of stimulating their Repair business, and on the face of it would appear to be well calculated to accomplish the purpose intended.

A little folder which is being sent out by the Champion Steel Range Company, 131-137 Viaduct, Cleveland, Ohio, has pasted upon the first page a small feather, above which is the inscription "This will tickle you" and below in smaller type the words "if you properly apply it." That which is intended to tickle is not so much the feather as the company's large and complete line of Hot Blast Steel Ranges, which they are offering under the names of Champion and Marquart. The company intimate that their travelling salesman will soon visit the town in which the dealer receiving the folder is located, and they ask him to reserve his orders until their representative calls and shows him the lines of Ranges mentioned. The Champion and Marquart are claimed by the company to be the only double flue Ranges which feed the fire with hot air and save one-third the fuel. The goods are offered in over 400 different styles and sizes, and are therefore adapted to meet all reasonable requirements.

The Chicago Furnace Supply Company, Chicago, have issued their initial catalogue giving illustrations and descriptive matter of the specialties which they manufacture. The plant of the company for the manufacture of Furnace Pipe. Adjustable Elbows, Stacks, Fittings, &c., is well equipped with modern machinery and is devoted exclusively to the manufacture of Furnace Supplies. Skilled mechanics are employed and the men associated with the enterprise have had long experience in this line of manufacture.

The Sifter Stove Polish Company have been organized at Saginaw, Mich., with a capital of $100,000.

The Chicago Stove Works, Chicago, Ill., have issued to the trade an illustrated leaflet setting forth the merits of their 1902 pattern Gold Coin Steel Ranges and Stoves. The company have placed on the market a new line of Gas Stoves under the name of Royal Gold Coin, these being made in three sizes and handsomely decorated.

Chas. C. Heath & Co. of Philadelphia, Pa., and Baltimore, Md., have now in operation at their Philadelphia branch store, 136-138 North Second street, a department for the manufacture of Stove and Furnace Heating Pipe, in which branch of the trade they propose being quite a factor. Henry Swartz, the manager of the branch house, advises us that the business done by them in Philadelphia has exceeded their best expectations. The demand for Gas Ranges, Oil Stoves and Ovens has been very large, and their only difficulty is in obtaining deliveries promptly on this class of goods. An excellent business continues to be done in Stove Repairs. Mr. Swartz is an active figure on the street, and wherever there is any business he is pretty sure to be around.

The Southard-Robertson Company of Water street and Peck slip, New York City, call the attention of the trade to their Magnetic Girard Range by means of a neat four-page folder printed in two colors, which they are sending out. The Range is made in six sizes for coal or wood, and has been redressed and greatly improved for this season. It is of substantial appearance and has an attractive exterior, a prominent feature of the decoration being a nickeled name plate on the oven door. The range is equipped with the modern improvements and can be furnished with either plain flat bottom grate or duplex grate, as preferred. Special linings with extended back are provided for burning wood as a fuel and cast plates for burning soft coal. All sizes are made with reservoir, the tank being of heavy copper lined with tin and easily removed for cleaning. Another circular which the company are sending out refers to the Magnetic X Ray, a substantial Range made with either five or six boiler holes and which is referred to as an entirely new construction. The cabinet base is entirely separate from the body of the Range, which has large oven, pedal door opener and nickel trimmings.

J. M. Litchfield, New York, is lending his assistance to the development of a foreign trade for Stoves. He has recently made shipments to China, South Africa, Jamaica and the Azores.

The United States Register Company, Limited, manufacturers of the Jones Side Wall Warm Air Register, Battle Creek, Mich., have experienced such an active trade that they have found it necessary to enlarge their works, but are now in a position to take care of the much increased volume of business. Their output at the present time amounts to 100 Registers per day. In a neat catalogue the company set forth the merits of the Jones Side Wall Register, which is provided with an adjustable deflecter, causing the air to enter the room from the Register at an angle of 45 degrees. The manufacturers guarantee the Side Wall Warm Air Register to do better work than Floor Registers where the furnace is properly set and the air supply correctly arranged.

The Monarch Stove & Mfg. Company, Mansfield, Ohio, advise us that they are in a position to give all orders prompt attention. Their facilities are much greater than heretofore, accordingly they are enabled to keep up with the demand in good shape, although at the present writing they are considerably ahead of last season as to sales. The Monarch line seems to be taking a very firm hold on the trade, the company's sales being 33 1-3 per cent. ahead of last year. They take this as pretty conclusive evidence that their products are satisfactory to their customers. The Monarch New Method, which is an evaporating Stove, and the Monarch Cabinet, known as their No. 122, have proved wonderfully successful custom bringers this season.

Rebates to the Retail Merchants.

An illustration of the manner in which a prominent manufacturing company are endeavoring to establish relations with the retail trade is given in a form of contract prepared by them and circulated by their travelers among the merchants. This contract, which is reproduced below, is, it will be observed, an agreement on the part of the merchant to purchase from the manufacturers direct all of the goods of their manufacture which he sells. As a reward for this, he is to receive a rebate of 5 per cent. at the end of the year. The form of agreement is as follows:

To the ——— Manufacturing Company:

In consideration of the sum of One Dollar ($1.00) to me in hand paid, receipt of which I hereby acknowledge and other considerations, I hereby agree to order all ——— ware which you sell exclusively from you from this date until December 31, 1902, at fair and reasonable prices, with the understanding that if I do purchase exclusively all such ——— ware from you during the said time, that on receipt of satisfactory proof to you by me of same, that on December 31, 1902, you will pay me an extra cash bonus or rebate (to be considered strictly confidential) of five per cent. (5%).

Yours very truly,

———————

Rochester Stamping Company.

The Rochester Stamping Company, Rochester, N. Y., have increased their capital stock from $300,000 to $500,000, in order that they may to better advantage handle their rapidly growing business, which now covers the entire country, as well as considerable foreign ground, including German, English, French, Australian, South American and African clientage. The company are at present employing about 500 hands, with 44 salesmen on the road, and are running two factories full time. They have recently been obliged to equip a second factory and also build a new storage warehouse. All the capital stock is held by the original stockholders, none of it being offered outside. The company are looking for a very satisfactory trade this fall, as there seems to be a growing demand for the goods of which they make a specialty.

Landers, Frary & Clark's New Catalogue.

Landers, Frary & Clark, New Britain, Conn., and 82 Chambers street, New York, have just issued a very practical and convenient trade catalogue illustrating and describing the large and diversified line of goods which they manufacture. The book has flexible covers for quick reference, and is divided into two sections, there being 420 pages in all, each 9¾ x 6½ inches. The first 208 pages relate to fine table cutlery and butchers' tools. This section, with its own separate index, is designated as Catalogue No. 19. The second section, Catalogue No. 20, of 212 pages, treats of a large assortment of hardware articles, among which are the Universal food chopper and Universal meat chopper, stuffers, coffee, spice and drug mills, numerous kinds of house furnishing and kitchen utensils, scales, cocks, faucets, bibs, bright wire goods, &c. The catalogue will undoubtedly meet the cordial approval of the trade as presenting the important lines of goods to which it relates in a businesslike and convenient manner.

Lightning Ice Chipper.

North Bros. Mfg. Company, Philadelphia, Pa., are offering the ice chipper herewith illustrated, which is an improvement on their Crown chipper and designed to do more rapid and effectual work. The teeth are made of hardened and tempered steel pins having the ends beveled for cutting. The guard or guide is open to permit the chipped ice to escape freely. The chipper is made in two styles, as shown in Fig. 1, No. 1 for family use and No. 2, with a handle 48 inches long, for confectioners, hotels, restaurants, &c., where considerable quantities of chipped ice are used. In Fig. 2 the chipper is shown in use.

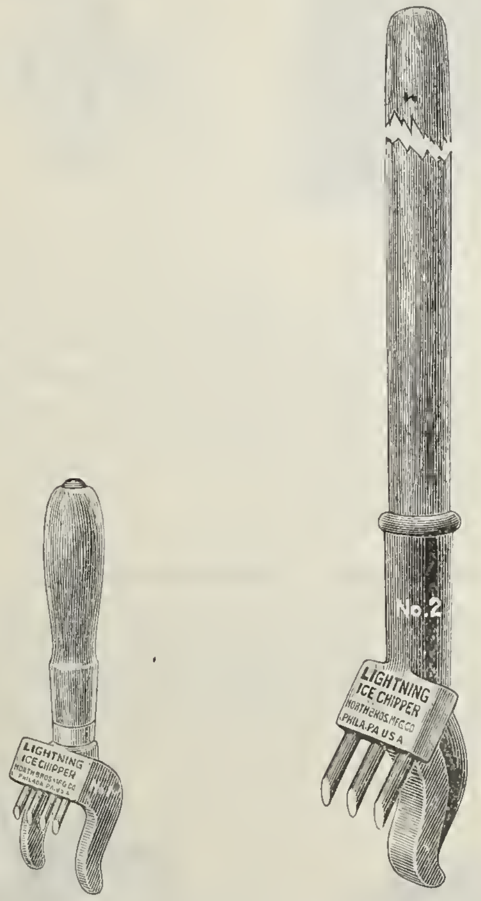

LIGHTNING ICE CHIPPER NORTH BROS. MFG. CO. PHILA. PA.
No. 2
LIGHTNING ICE CHIPPER NORTH BROS. MFG. CO. PHILA. PA. U.S.A.

Fig. 1.—Lightning Ice Chipper.

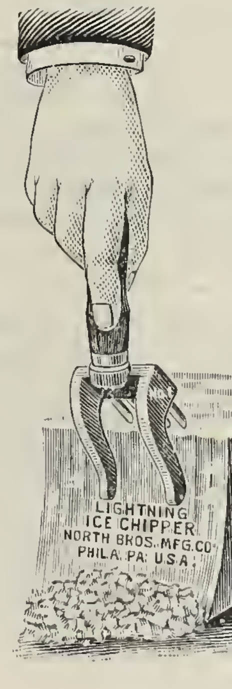

LIGHTNING ICE CHIPPER NORTH BROS. MFG. CO. PHILA. PA. U.S.A.

Fig. 2.—Lightning Ice Chipper in Use.

The Sun Dinner Pail Ear.

W. B. Bertels, Sons & Co., Wilkes-Barre, Pa., manufacturers of Sun dinner pails, one of which is shown in Fig. 1, have recently brought out a new ear, as shown in Fig. 2. The body of the ear is made of heavy sheet steel and tinned, and the spring of heavy spring brass. The manufacturers state that they have used different styles of ears in the past, but find this one the best of their production. Regarding the pails, we are advised that the latest improved machinery is used in their manufacture and that there is no hand work done on any pail except the soldering.

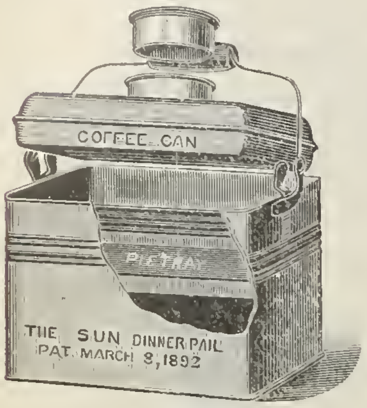


Fig. 1.—Sun Dinner Pail.

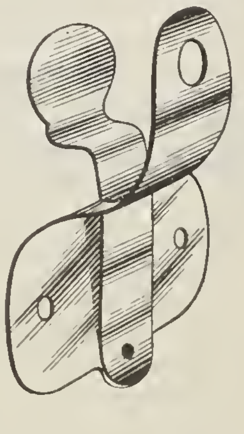


Fig. 2.—Spring Ear.

The Pelouze Coffee Percolator.

The Pelouze Scale & Mfg. Company, 118-132 West Jackson Boulevard, Chicago, Ill., are bringing out the coffee percolator shown herewith. It is designed for use in any coffee pot, and is referred to by the manufacturers as making coffee richer, stronger, purer, more healthful and delicious in flavor than other coffee making devices. As results from its use it is stated that there is no discoloration of coffee, no bitter taste, no grounds and no sediment.

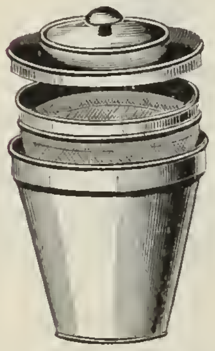


Fig. 1.—The Pelouze Coffee Percolator.

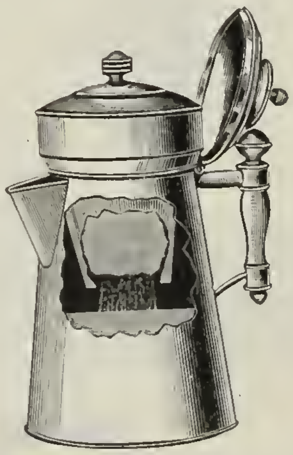


Fig. 2.—Pelouze Percolator in Coffee Pot.

Clark & James, 122 Water street, Cleveland, Ohio, are manufacturing Glasbrite, a chemical composition for cleaning windows, arc and incandescent lamps, mirrors, cutlery, silver, brass, &c. The composition is put up in cakes, and is applied with a damp sponge or cloth and polished with a dry cloth. It so thoroughly polishes glass, it is explained, that dirt and dust do not adhere readily, and that when they do they can be wiped from the glass with a dry cloth. It is remarked that the composition contains no grit or acid, that it simply cuts the dirt and that being a chemical it will not scratch the finest glass.

Wm. Parkinson, Madison, Neb., has disposed of his business to the Hume-Robertson-Wycoff Company, who will continue the wholesale and retail Hardware, Stove, Tinware, House Furnishing Goods, Glassware and Plumbing and Heating business at the old stand.

Stove and Hardware Dealers.

Wm. S. Long has recently engaged in business in Marquette, Neb., handling Hardware, Stoves, Tinware, Sporting Goods, Furniture, &c.

Barnett & Lipe, dealers in Shelf Hardware, Stoves and Tinware, El Dorado, Texas, have been succeeded by Y. F. Barnett.

W. M. Black Mercantile Company have opened up in business in Garber, O. T., handling Shelf Hardware, Tinware, Stoves, Sporting Goods, Groceries, &c.

D. B. Ashbrook of McFall, Mo., has opened a branch store at Carrollton, where he is carrying a stock embracing Hardware, Stoves, Sporting Goods, &c.

E. G. Sjovall has sold his Hardware, Stove and Tinware business in Stormsburg, Neb., to Carlson & Olson.

The New Mexico Hardware & Furniture Company, Tucumcari, N. M., have been succeeded by the New Mexico Mercantile Company, a stock company organized under the laws of New Mexico. The officers of the new concern are as follows: C. H. Rankin, president; J. I. Lamb, vice-president; I. C. Barnes, treasurer, and L. D. Allred, secretary. The company handle Hardware, Stoves, Tinware, Glassware, Lumber, Crockery, Furniture, &c.

Hendricks & Nehr have sold their wholesale and retail Shelf Hardware, Stove, Tinware, Buggy and Wagon business, at Guthrie, O. T., to the Stumpff Hardware Company.

Atlas Tack Company, George W. Weymouth, president and manager, announce under date June 1, that they are now installed in their new mill at Fairhaven, Mass., and are fully equipped with the latest and most improved machinery in every department. It is further stated that as the Taunton office has been discontinued, all correspondence of whatever nature should be sent to the new address, Fairhaven, Mass.

A. Ammundson has purchased the Hardware, Stove and Farm Implement business formerly conducted by Turek & Dvorak in Wagner, S. D.

Clinton Wire Cloth Company, who recently abandoned their headquarters in Beekman street, where they have been for a long term of years, are now thoroughly settled in their new quarters, 33 Park place, New York. Their new premises have been thoroughly renovated, and they now occupy the street floor, basement and subbasement. They have commodious bins for storing stock and large drawers conveniently located to receive Brass, Bronze and Copper Wire Cloth, manufactured by them. They are also well equipped with power elevator, electric lights and other modern conveniences, with well appointed offices on the main floor.

P. A. Myers, junior member of the firm of F. E. Myers & Bro., Ashland, Ohio, will take a well earned vacation this summer and will devote it to making an extended tour of Europe. In his travels he will visit the agencies which have built up the company's extensive business abroad and will study trade conditions with a view to further extensions. He sails June 14 on the "Etruria," arriving in London in time to witness the cononation of Edward VII. The trip will include England, Holland, Belgium, Germany, Switzerland and France. Mr. Myers expects to return on the "Umbria," August 16.

The American Utensil Company, Baltimore Md., are issuing a circular illustrating the Beveridge Sanitary Cooker. These utensils are made in different sizes, in tin, polished copper and enameled ware.

Mayor Rose of Milwaukee, Wis., has found it necessary to make a decision relative to the technical meaning of the term "organized labor." This term is frequently used in city contracts. The Mayor has decided that this term cannot be considered to mean organized bodies of men who are not recognized by the national or international unions. The particular case which called out this decision was one in which a contractor at a new school building, now in process of erection, employed men belonging to an independent union.

The Reich Granite Ware Company, Cleveland, Ohio, are distributing a catalogue illustrating their high grade white lined Enameled Steel Ware, which is produced in all colors. The company also offer blue recoated seconds and gray seconds in this ware.

The United Electric Heating Company, Detroit, Mich., are issuing a folder devoted to their electrically heated Sad Irons. The circular shows the Irons in all styles, shapes and weights. It is explained that they will operate on any electric light or power circuit, direct or alternating.

The Pike Mfg. Company, Pike Station, N. H., and New York, have issued a booklet treating of Oil Stones, their selection, use and care. The purpose of the booklet as set forth in the introduction is to disseminate a better knowledge of Oil Stones among tool dealers and users. It is remarked that while the Oil Stone line is not a large item in the stock of any hardware house, yet it is a very important one, inasmuch as the successful use of all edge tools depends very largely upon proper sharpening. The company are supplying these booklets in any desired quantity, free of charge, to all dealers, whether customers of theirs or not.

Letters from the Trade.

Damage to Freight in Transportation.

We have received from a large house doing a jobbing business in one of the Eastern cities the following communication upon a topic of close interest to many of our readers:

In these times of progress, when we hear and read so much of great consolidations of railroad interests, as well as of the large earnings of railroads and declarations of dividends from the earnings, it might seem to be in keeping with good methods if the proper departments of the railroads were requested to instruct their loaders of freight to give more attention to the handling of the same in both local and carload lots. We are certainly in a sorry plight to-day in this respect. While being compelled to submit to the slow delivery by the railroad companies, apparently on account of lack of cars, we are also forced to permit them to handle our goods in such a careless manner as they oftentimes do. Take, for instance, some of the goods handled by most of the trades in which your readers are interested. How many times are galvanized and black sheets damaged in transit, owing to fish brine or other liquids leaking from packages set on the sheets? Then see the number of stoves and stove castings that are broken in transit through careless handling. In how many instances cases and barrels are pilfered of a portion of their contents. Tin plate, too, is thrown about so carelessly that, heavy as it is and well packed, the boxing is often broken to such an extent that the sheets are strewn over the railroad platform. Furthermore, it often happens that after goods have been damaged by careless handling, the freight having been paid, it takes anywhere from one month to one year to get a comparatively small claim settled—if it is ever settled at all. There should be some remedy for this trouble. No doubt if some of the associations in the different lines of trade would persistently urge the matter of more careful handling of goods upon the proper railroad officials the merchants might get the proper service for which they pay.

The Advantage of Consolidation.

In view of the fact that many manufacturers look with more or less question upon the desirability of consolidation, even in manufacturing lines, the following communication from a Massachusetts manufacturer will be of interest. It will be observed that he points out the considerations which in his judgment show the advantage of consolidation when wisely effected:

My impression is that consolidation of manufacturers of a certain class of goods if properly managed cannot be otherwise than profitable, first, to the manufacturers; second, to the workmen, and, third, to the purchasers.

The increased profits to the manufacturers will come from the benefit of buying largely, paying promptly, reduced freight bills, decreased selling expenses by traveling salesmen and the elimination of competition. The workmen will benefit by the prosperity of the manufacturers in increased pay and steady work. The purchaser's benefit will come from being able to buy at a stable price and figuring his profits confidently on that price. Price cutting and irregular market make purchasers more conservative in buying, because if they buy at a certain price to-day and some one else comes along and offers the same goods at a lower figure the purchaser feels that he has made a loss on his first purchase, so he is more careful to buy only for his immediate wants. In fact, some large buyers say that they have no objection to the price of goods offered if they only know that they have them at the lowest price, and not have some other manufacturer offer them at a less price when next his salesman calls.

The Cooper Union.

At the annual commencement exercises of Cooper Union, New York, on May 31, Abram S. Hewitt, secretary of the Board of Trustees, announced several new gifts to the institution and stated that hereafter the entire building would be used for the advancement of knowledge. Mr. Hewitt made a most interesting address on this occasion, in which he stated that the endowment of the institution, which last year was $958,000, had reached a grand total of $2,133,159. The great increase during the year came partly from Andrew Carnegie and partly from the Cooper family. Mr. Carnegie gave $600,000 and the Cooper family an equal amount, while a gift of $250,000 was made to the institution by one whose name has not been made public. Mr. Hewitt took great pleasure in making this announcement, stating that for 43 years he had annually presented the report of the Board of Trustees on such occasions, and had usually been obliged to state that the income of the institution was inadequate, and for the greater part of those 43 years the appeal he made seemed to fall on deaf ears. He had not expected to live to see the great object accomplished of freeing the building from secular uses and turning it over entirely to educational work. Prizes and diplomas were awarded to a large number of graduates, including students who had taken courses in the night schools in science, in qualitative and quantitative chemical analysis, and in the night school of art.

Strike Injunction Decision at Chicago.

The Appellate Court of Illinois has affirmed in every particular the injunctional order granted by Judge Chetlain last January restraining John Beaton and other members of the International Association of Machinists from in any manner unlawfully interfering with the business of Robert Tarrant, machinery manufacturer at 52 Illinois street.

The decision was the outcome of litigation involving the strike at the plant of the Allis-Chalmers Company a year ago. Mr. Tarrant took contracts from that company, and on August 3 of last year the union machinists in his employ struck. Mr. Tarrant set up in his bill for an injunction many specific acts alleged to have been done by the striking machinists to the financial injury of his business. Numerous affidavits also were filed by men who asserted that they had been threatened and intimidated by the strikers. The Appellate Court adopts Judge Chetlain's conclusions of law in regard to the case, which in part are as follows:

"Workmen may use the streets and highways in a manner not inconsistent with public travel for the purpose of entreaty, inducement and peaceable persuasion in good faith, and a patrol picket may not necessarily imply force or a threat of bodily harm; but to accomplish their purpose they must not overstep the bounds and use threats, abusive epithets or intimidation, or congregate in such number or in such manner or with such a show of force as is calculated to intimidate a reasonable and prudent man, and no harm can result in granting an injunction to restrain such unlawful conduct."

E. A. Buck & Co., Palmer, Mass., have bought C. W. Taylor's Hardware stock in Exeter, N. H., and have engaged C. W. Robinson to manage the business at that point. The stock comprises Shelf and Heavy Hardware, Stoves and Tinware, Agricultural Implements, Crockery, Sporting Goods, Wooden Ware, &c.

PLUMBING TRADE CONFERENCE ASSURED.

The probability of a conference in the plumbing trade, foreshadowed in *The Metal Worker* of last week, has now become an assured fact, and arrangements have been completed for a meeting between the officers and Executive Committee of the National Association of Master Plumbers and of the National Committee of the Confederated Supply Associations. This meeting will be held in Atlantic City on June 13. A year ago both of these bodies were working under the New York Conference Resolutions, which were the result of a conference held in New York City between the same two bodies. During the year, however, these resolutions were found to be unsatisfactory, and at the present time the plumbers are working under what is known as the Cleveland Resolutions, while the supply trade are operating under the resolutions adopted at Chicago. These different sets of resolutions vary in some important points, and the provisions for arbitration and conciliation of differences are omitted. It is hoped that the deliberations at Atlantic City will result in a mutually satisfactory agreement. That there is some probability of such a result is indicated by the smoothness with which this branch of trade has been conducted, notwithstanding the difference in the provisions of the resolutions governing the two interests engaged in it.

MANUFACTURERS' AND JOBBERS' MEETING.

A year ago the Association of Manufacturers and Jobbers of Plumbing Supplies of the East met with the Central Supply Association at Detroit. This year the Central Supply Association had practically completed arrangements to hold their summer meeting at Put-In-Bay. This association, however, courteously changed their arrangements and will convene with the Association of Manufacturers and Jobbers of Plumbing Supplies in a joint meeting to be held at the Cataract House, Niagara Falls, N. Y., on June 24.

At the Detroit meeting, E. D. Hornbrook, the newly elected president of the National Association of Master Plumbers, was invited to be present in his official capacity, and it may be expected that the newly elected president of this body will again be the guest of the manufacturers and jobbers. As the results of the deliberations of the conference at Atlantic City and of the convention of the National Association of Master Plumbers will be known at the time this body meets, opportunity will be afforded to take suitable action in reference to them. The conservative element in both branches of the trade will be well pleased if, at the conclusion of these meetings, the differences which have existed during the year will have been removed.

PROGRAMME OF FIFTH SEMIANNUAL MEETING OF THE AMERICAN SOCIETY OF HEATING AND VENTILATING ENGINEERS.

Hotel Rudolf, Atlantic City, N. J., Monday, June 16:

Morning Session, 10 o'clock.

Roll Call.

President's Address.

Paper, "Cooling an Auditorium by the Use of Ice," by John J. Harris.

Discussion.

Topical Discussion.

Afternoon Session, 2 o'clock.

Paper, "A Time Limit and Dry Walls Necessary in Testing a Heating Plant," by John Gormly.

Discussion.

Topical Discussion.

Evening Session, 8 o'clock.

Paper, "A Test of a Fan Blower With Cast Iron Radiating Surface," by Prof. R. C. Carpenter.

Discussion.

Reading of Papers.

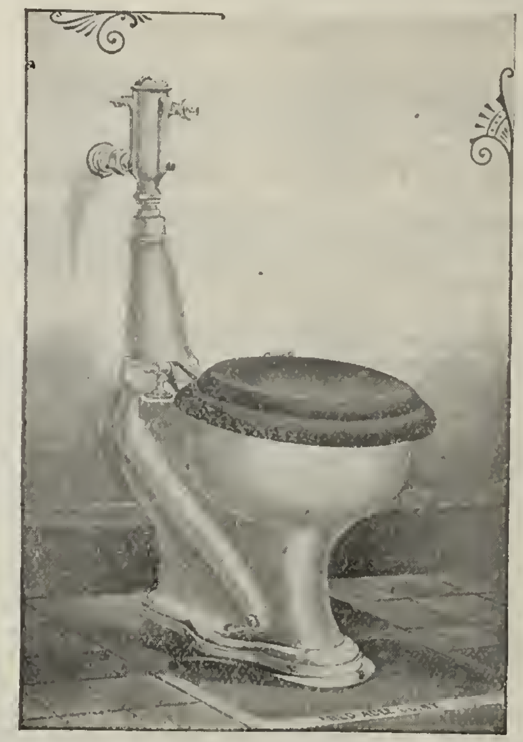
Discussion.

Topical Discussion.

A New Closet and Valve.

In comparison with the water closet of a decade ago the modern water closet is as much more efficient in service as it is more attractive in appearance. The latest productions in this line present also further important improvements in construction and operation. Fred. Adee & Co., 90 Beekman street, New York, have applied for a patent on the Zenith flushing valve, shown in connection with the Cygnet water closet in the accompanying illustration. This closet is adapted for the use of the valve shown or may be flushed with the ordinary tank provided with siphon jet closets. The Zenith valve is especially suitable for use in connection with a number of water closets in an office building, its construction enabling it to operate satisfactorily under the varying pressures afforded on different floors. The mechanism of the valve is very simple, and consequently it is not likely to get out of order. It opens by means of a push lever and closes with the pressure, so that it is absolutely tight, and, furthermore, is noiseless in operation.

The Cygnet closet, shown in connection with the valve, is of the regular approved siphon jet type. At the base of the channel to the jet there is a drain plug, so that when the closet is placed in a building which is unoccupied in winter all of the water that it contains may be drawn off to make it perfectly safe against damage from freezing. The most important feature of the closet is the flushing horn at the back to which the valve is connected. Inside of this extension, which is about 10 inches high, and directly below the inlet from the valve, is a brass tube connected directly with the channel to the jet, which operates when the valve is open. The first rush of water is down this pipe to the jet. After this channel is filled with water the overflow from the pipe passes to the flushing rim. The effect of this construction is to induce a suction of air from the bowl to the closet through the openings in the flushing rim and also to drive the air in the upper leg of the trap before the jet. The effect of the jet is to dispose of the solid matter that may be in the bowl before it is subject to agitation or churned, which is to a greater or less extent inevitable in all siphon jet closets. The slight period of time after the jet is started to work before water appears in the flushing rim allows the air in the bowl of the closet to be drawn away, very much after the manner in which a local or seat vent operates. In operation the jet starts a strong siphonic action and the flushing rim secures a thorough scouring of all the surface presented in the bowl. At rest the bowl is occupied by a good surface of water and is protected by an ample water seal. The bowl is constructed of vitreous china in one piece. The closet is well worthy of careful examination, and they have met with the approval of a number of plumbers who have purchased and installed them.



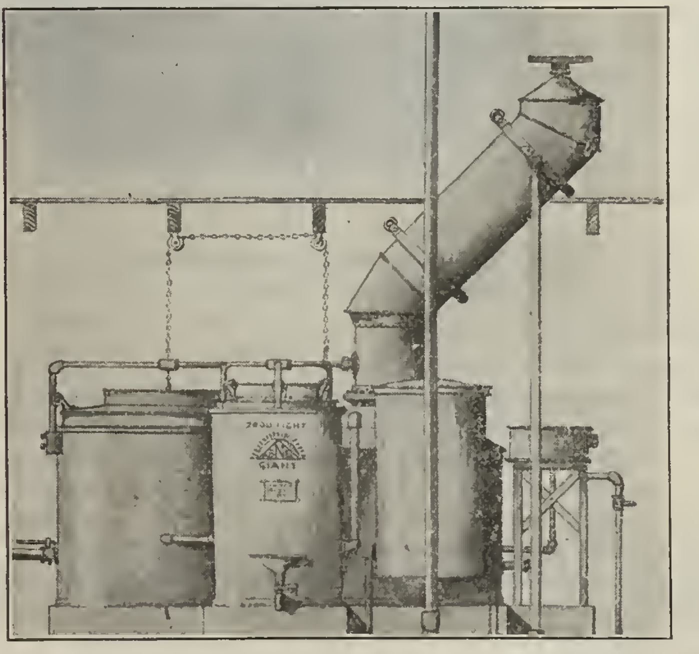
A New Closet and Valve.

Town Lighting Acetylene Plants.

Since the production of calcium carbide has been made practicable at a cost low enough to permit its use for the production of acetylene gas, this method of illumination has increased in popularity as its capability of meeting varied requirements has become known. Owing to the strong illuminating power and the pleasing light resulting from the burning of this gas, its use has been popular not only in bicycle and house reading lamps, but also when produced in larger generators for illuminating residences, as well as for illuminating summer hotels and their surrounding buildings. Having shown its adaptability for this purpose, it was only a short step to the illumination of villages and small towns, and even of quite large centers of population.

The Abner Acetylene Gas Company, 32-36 La Salle street, Chicago, Ill., have not only been successful in the production of house lighting plants, but have now issued a special catalogue devoted to their apparatus suitable for municipal use. In the accompanying illustration a view of one of their 2000-light acetylene gas generators is presented. Plants of this character are designed to be installed in the basement of a building, and by means of a hopper extending upward, as shown in the cut, they receive the charge of carbide from the upper floor of the building. This apparatus is capable of receiving a charge of 2000 pounds. These plants were designed with a view of compactness in size, so that a small building can be erected at low cost which will contain the entire apparatus.

Another feature is the automatic production of the gas, whereby fresh gas is supplied to the mains continuously and no disadvantage is experienced from deteriorated gas that has stood for some time. The automatic feeding of the carbide prevents the escape of gas when recharging the generators, and, as the feed is measured, when enough is thrown into the generator to generate the quantity of gas that is needed to raise the bell no more gas can be produced until the quantity made is consumed. This apparatus is also automatically supplied with water, keeping down the temperature and insuring the full capacity of the carbide in a gas generator.

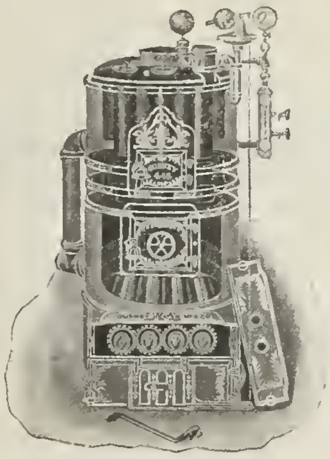


Town Lighting Acetylene Plants.

Naturally, where so large an amount of carbide is used as in a municipal lighting plant, the residuum must be cared for or the capacity of the generating chamber will be reduced. In this apparatus the residuum is discharged each time the bell rises. A feature of the apparatus is two scrub or water cleaning chambers and two filters or dry cleaners, by means of which the gas which reaches the distributing mains has been freed from all matter that is liable to cause annoyance. It is claimed that so little attention is required for a 2000-light plant that a man who cares for it can also look after the entire business of the plant—making out and collecting bills, reading the meters and such other emergency work as may be necessary. The company have issued a special pamphlet giving full particulars and drawings for the installation of town lighting systems.

The Gurney 400 Series Steam Boiler.

In the accompanying illustration is given a transparent view of the Gurney 400 Series steam boiler, made by the Gurney Heater Mfg. Company, Boston, Mass.



The Gurney 400 Series Steam Boiler.

The sections above the fire contain a number of flues to allow the products of combustion to find their way to the chimney, and at the same time to enable their greatest heat to be utilized for heating the water lying upon the other side of the surfaces with which they come in contact. The boilers are provided with a grate, rendering the care of the fire free from labor, and are equipped with the usual automatic draft regulating features. The boilers are made in ten different sizes, with grates from 17 to 35 inches in diameter, and are rated to carry from 300 to 2200 square feet of direct hot water radiation. The steam boiler is made in eight sizes, rated to carry from 250 to 1225 square feet of direct radiation.

Approved Plumbing Fixtures.

E. S. Wheeler & Co., New Haven, Conn., have recently issued Catalogue D, devoted to approved plumbing fixtures. The catalogue is 9½ x 12 inches in size, bound in green cloth covers, and has 170 pages, including a well arranged index. The introduction states that the present publication contains plumbing fixtures which have met the approval of experienced and practical men. The first illustrations presented are of bathrooms equipped with the most modern plumbing fixtures, which are followed by several pages showing the Wooster solid white porcelain Roman and French pattern bathtubs. The next section of the catalogue is devoted to white enameled iron sitz and foot baths and a varied line of wide and narrow roll rim and flat rim enameled iron bathtubs. These are followed by a variety of supply and waste fixtures, shower baths and shampoo fixtures. Solid porcelain, fine marble and white enameled iron lavatories are next shown in great variety. Another section of the catalogue is occupied by fine water closets, one page being devoted to the Universal direct flush controlling valve.

Plumbers' wood work, flush tank valves, seats and nickel plated flush and supply pipes form another section of the catalogue. The next 30 pages are devoted to pantry sinks, kitchen sinks of white porcelain ware, slate, copper and enameled iron and slop sinks, followed by a variety of laundry trays. Urinals and urinal stalls, range boilers, plumbers' marble, lavatory bowls, lavatory fittings and fixtures, brass traps, nickel plated supply and waste fixtures, basin cocks, compression bibbs and a varied line of plumbers' brass work for kitchen and bathroom equipment occupy the closing pages.

LEIGHTON BROS., Fort Dodge, Iowa, agents for the New York Central Iron Works Company of Geneva, N. Y., are pushing the sales of the Dunning Boilers and Tanks throughout the State of Iowa.

SUBSTITUTE FOR SOIL.

BY D. F. N.

It is probable that not every plumber knows of a substitute for plumbers' soil which has been found far superior in doing its work. It is common shoe blacking. How many times when the lead worker has been doing a nice piece of work he began to kick and jaw with the helper when the soil started to peel off from having a little too much glue in its makeup, or sometimes a little less than was necessary. Some of the most clever mechanics use paste only. Now and then, on a pinch, a fellow will split a raw potato and rub it up and down on the portion of the work to be protected to cause it to tarnish so that it would not tin. In my opinion there is nothing found as yet that does the work of common shoe blacking. This, of course, is not kept in stock at the shop: because if it was I suppose it would fill more than one purpose, particularly if the box was made in the usual shape. If the shoe blacking was put in cylinders having a small opening, provided with a common screw cap, into which a brush could be inserted, it would be easy enough to handle and would carry readily in the kit. If you have never tried shoe blacking on your lead work, carry a box in your kit and give it a trial.

Heating from Street Mains.

At the recent Cincinnati meeting of the National Electric Light Association the utilization of the exhaust from power stations for heating buildings was discussed. J. F. Porter and P. H. Korst referred to their experiences with systems of heating by the circulation of hot water instead of direct distribution of exhaust steam. With direct heating by turning exhaust steam into the pipe system there is necessarily considerable back pressure upon the engines. By forced circulation of condensing water through the heating system the engines may be run condensing. In extremely cold weather the back pressure may be advantageously increased during periods of the day when the load on the engines is light to elevate the temperature of the water. This method is particularly applicable to electric lighting stations.

The Page Company, 114 Main street, Norwich, Conn., inform us that they have recently increased their capital stock and are now prepared to double the output of their New Era Steam and Hot Water Heaters. They are also about to bring out what they claim to be the best Sectional Boiler ever produced. The company's plant has recently been equipped with a 10 horse-power gasoline engine. They are sending to the trade a catalogue of the New Era Boilers and the Page Radiator Holder.

The Richmond Magazine Boiler.

A boiler of the vertical sectional type that is suitable for use as a magazine feed boiler, and also possesses excellent features as a surface burning boiler, is somewhat of a novelty to those engaged in the steam and hot water heating business. The Richmond Stove Company of Norwich, Conn., have brought out this year a boiler of this type. In Fig. 1 a broken view is presented showing the magazine, the fire, the combustion chamber, the flues and the fire travel. The view given in Fig. 2 shows the grate arrangement, which is of the labor saving type and calculated to keep a bright fire in all parts of the surface. This view also shows the arrangement of the fire surface and the flue surface. This boiler is recommended where the owner desires to minimize the consumption of fuel and the attention necessary to maintain a steady fire, and where uniform heat is needed throughout the night as well as the day. It is claimed that the magazine will hold enough fuel to maintain a fire from 36 to 48 hours without choking the fire to any serious extent, and that active combustion will be preserved continuously at the sides, where it is most effective and in direct contact with the water legs and fire surface. It is also pointed out that the contractor will find satisfaction in the fact that the boilers are assembled by means of manifolds and lock nut nipples. The water sections rest on a base made up of sections provided with sockets for supporting the grate. The cuts show doors arranged for cleaning the fire and flue surface. At the rear are similar doors adapted for cleaning the boiler and also for use as check drafts.

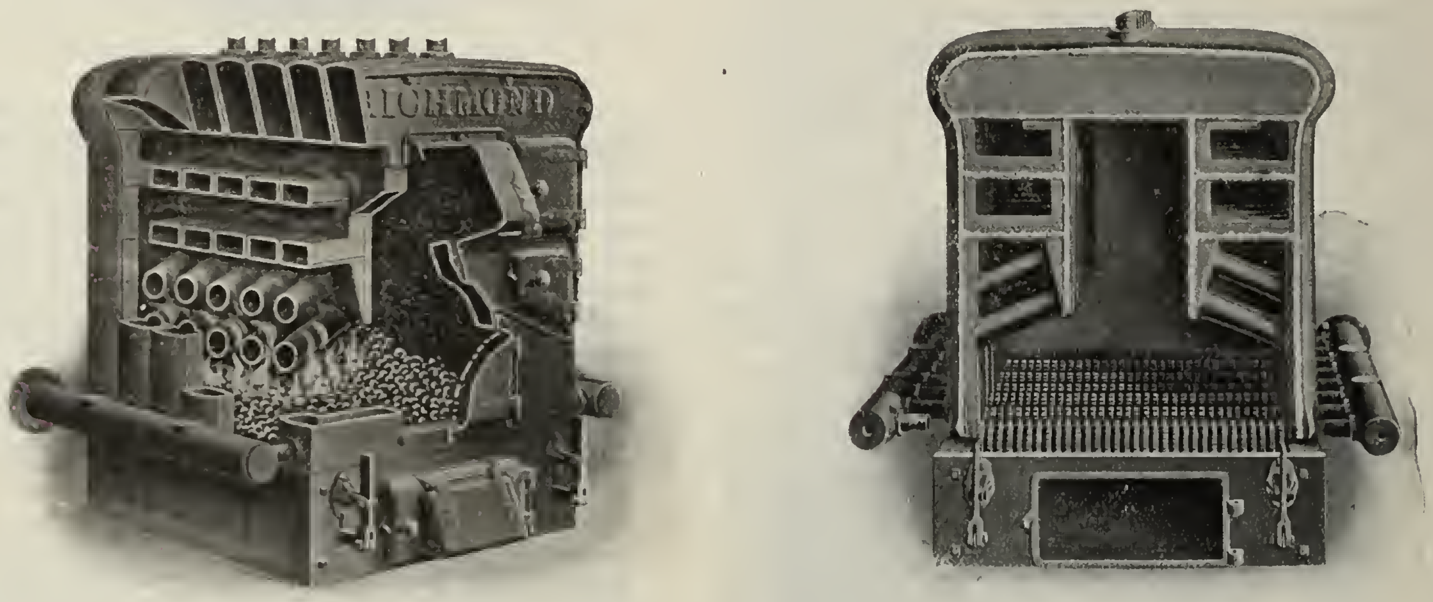


Fig. 1.—Broken View.

Fig. 2.—Interior View.

The Richmond Magazine Boiler.

Another feature of the boiler is the use of bridge wall sections, so that the size of the fire chamber may be reduced to the requirements of the season. The top header of the steam boiler is connected with the sections by means of long nipples which extend up into the steam drum, so that condensation in this drum is not carried off with the steam to the heating mains, but is carried down to the return by means of a special pipe connection at the rear of the heater, which connects at the back with the return headers on each side of the boiler. These boilers are made in nine different sizes, composed of from 4 to 12 sections, having grates 30 inches wide and from 18 to 66 inches long. They are rated to carry from 600 to 1800 square feet of direct steam surface and from 1000 to 3000 square feet of direct hot water surface. The extreme hight of the boilers is 70 inches and the extreme width 56 inches, the water line being 49 inches above the floor. The company have recently issued an especially fine catalogue giving full explanation of the various details and a variety of views and diagrams, so that the construction of the boiler can be readily understood.

SETTING LAVATORY BOWLS.

BY HELMAR.

Solid porcelain and enameled iron lavatories cast in one piece have found favor with the public, but the work of "setting" bowls is none the less important, and correct work is even more highly appreciated now than formerly. Much of the marble work carried in stock is indifferently cut and fitted, but slabs made to order give the plumber a chance to use his skill when specifying. All bowls should have the face which joins the slab ground so as to bring the whole face in one plane. This keeps the bowl from rocking on the slab, insures a close, neat joint, and the grinding takes the pottery glaze off so that the plaster will adhere.

Bowls should not be set and left where they will get freezing cold. The ground face should be well soaked with water before setting. If this is not done the porous face will take the water out of the plaster so quickly that it cannot be moved without ruining the joint, and it will be difficult to put the bowl down exactly right, even with the guide line and points previously marked on both slab and bowl to work by.

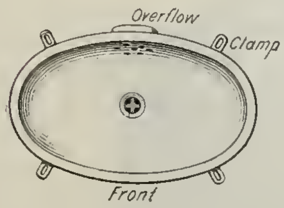


Fig. 1.—Oval Bowl.

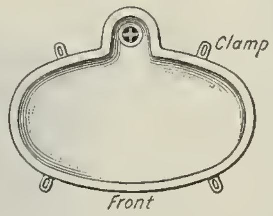


Fig. 2.—Recessed Bowl.

Setting Lavatory Bowls.

The grade of plaster used by dentists is best; less of it is needed; it adheres better and looks better when finished. It should be mixed to the consistency of cream, poured around the bowl hole inside the guide line and the bowl set carefully on it and pushed down and jostled into place quickly. The basin clamps should be screwed down while the plaster is soft and the inside and outside wiped clean. If the slab and bowl fit well a joint 1-16 inch thick is ample, and no overhanging plaster on either side is necessary.

Guide lines are made by the marble cutter by scratching around the bowl while it is held properly over the bowl hole. On stock slabs the plumber can make the guide line with a pencil. Any marble works will grind bowls for stock slabs very cheaply.

The plumber must determine whether the overflow shall be placed in front or back. When set at the back it looks bad, but is always in evidence and suggests cleaning when necessary. The overflow channel is sometimes in the way of the apron if placed at the front on apron lavatories. If placed at the side it may interfere with a bracket. The exact position of the overflow should be determined and marked with bowl in place before mixing the plaster.

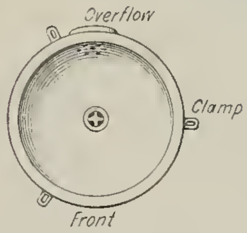


Fig. 3.—Round Bowl.

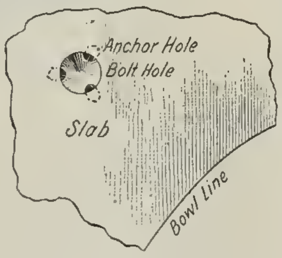


Fig. 4.—Drilled Slab.

Many kinds of basin clamps are sold. The usual type is cast or stamped with offset to reach over the flange of the bowl and slotted for the bolt. The bolt has a thin, flat square head. It is made of brass. Four clamps should be used on square bowls, and the oval and recessed bowls, shown in Figs. 1 and 2. Three clamps are sufficient for a round bowl, as shown in Fig. 3. In every case they should be placed so as not to come in the way of overflow, brackets, recess or apron.

On stock slabs, if the holes are not in the right position, new ones should be drilled. Holes for clamp bolts are usually poorly drilled on stock marble and the anchor holes need to be drilled deeper. Three anchor holes, as shown in Fig. 4, drilled at an angle of 45 degrees, as indicated by Fig. 5, will keep the bolt in place if the lead is poured hot and carefully calked, as in Fig. 6, which also shows the clamp holding the bowl in place.

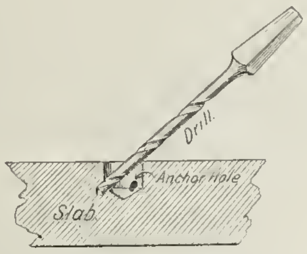


Fig. 5.—Angle of Anchor Holes.

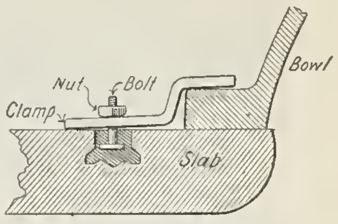
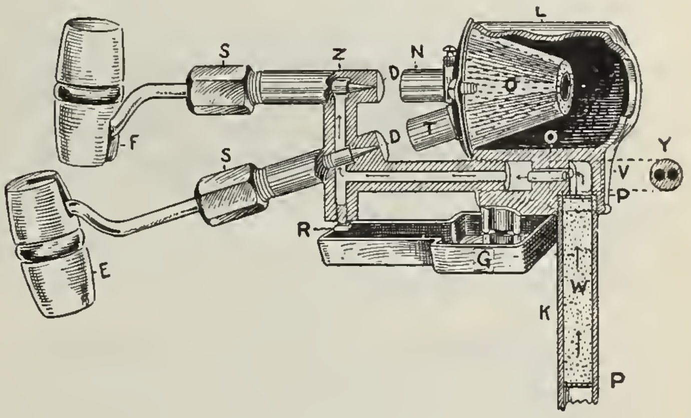


Fig. 6.—Calked Bolt and Clamp Attached.

The Turner Double Jet Gasoline Burner.

The Turner Brass Works, 44 Franklin street, Chicago, Ill., manufacturers of gasoline double jet burners, torches, blow pipes, band saw brazing outfits, brazing forges, &c., explain that the double jet gasoline burner herewith illustrated introduces an important improvement in gasoline blow torches. In this torch the gas and air are controlled independently, instead of by a single jet, the gas being controlled by one valve and the air blast by another. This two-valve control enables the operator, it is explained, to produce a flame of any desired size, from a small concentrated pointed flame to a large powerful one, and at the same time a most intense heat is maintained through all adjustments. In the cut the lower burner valve E is the gas valve and the upper burner F controls the air blast, thus combining the air and gas in a novel way, which principle is claimed to be an advance in high heat production. The double jet burner is referred to as giving perfect combustion and as not only generating the most heat, but as being the most economical of fuel.



The Turner Double Jet Gasoline Burner.

Gravity Cooling Machine.

As the hot weather season is indicating its presence, additional interest will be attracted to the invention by Prof. Willis L. Moore, chief of the United States Weather Bureau, Washington, D. C., of an apparatus for cooling dwellings. It is said that the machine resembles a stove, so that the cost of cooling a given amount of space is approximately the same as that for heating the same amount of space by a stove or furnace. The invention, for which patents are being taken out, is designed for cooling dwellings and hospitals. It is claimed that in addition to reducing the temperature it washes and cleanses the air and renders it dry and healthful. Should Professor Moore's device prove successful in operation, there can be no doubt that it has a wide field of usefulness before it.

School Heating in Philadelphia.

The Board of Education of Philadelphia, Pa., a few months ago, instructed John D. Cassel, Inspector of Heaters, to make a thorough examination of the heating apparatus in each school, with the following result: The furnaces to which he called attention were installed prior to 1890, and he said:

> In most of the buildings heated with hot air furnaces there is an ever present danger from fire, owing to the heater flues and heat pipes being set too close to the joists and floors. Wooden air ducts to the heaters and the use of wood wainscoting around heat breasts, with valved or winged registers set in same in narrow slat margins, and contracted or small heat flues, also constitute a source of danger from fire.

The inspector also furnished the following statistics: Number of schools fitted with the blower system, 34; with the gravity system, low pressure boilers and indirect and direct radiators, 56; with the gravity system, low pressure boilers and direct radiators only, 9; with a combination of steam boilers and hot air furnaces, 11; with hot air furnaces only, 130; with a combination of hot air furnaces and stoves, 3; with stoves only, 12; number of steam boilers of various types, 195; of brick set hot air furnaces, 515; portable heaters, 114; stoves, 134.

The National Association of Master Plumbers of Great Britain and Ireland.

The annual meeting of the National Association of Master Plumbers of Great Britain and Ireland was held at the Holborn Restaurant in London on May 21. The meeting was called to order by the president, W. L. Harrison, with about 80 representatives of the trades present. The reports of the officers showed the association to be in a flourishing condition. The principal discussion at the meeting was in reference to trade protection. After selecting Huddersfield for holding the next meeting of the Central Board in August, and Leicester for the next half yearly meeting of the association, in November, President Harrison was re-elected for another term. Some amusement was caused by the remark of the secretary that the members who were most ready to bring charges of irregularity against manufacturers were precisely the same members who were least ready to pay their subscriptions to the association.

The Aurora Acetylene Company.

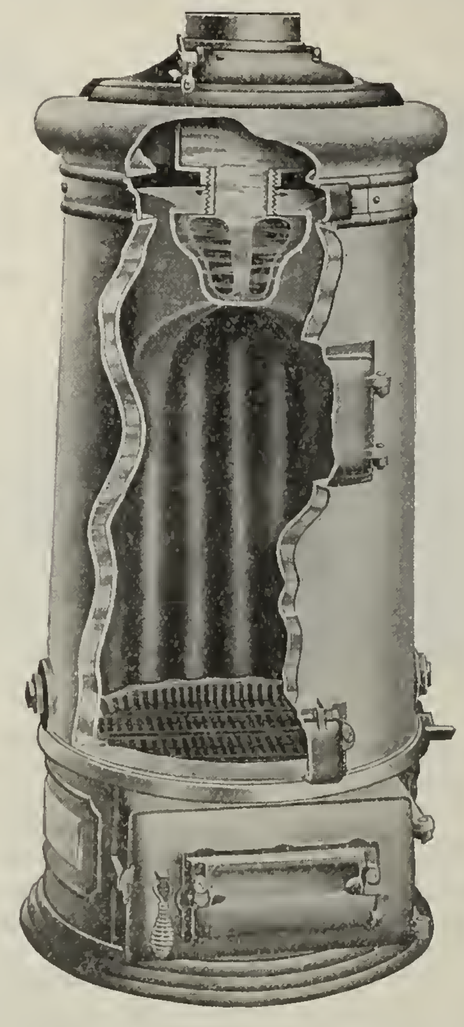
Harris & Partridge, formerly of Jacksonville, Fla., on account of the growing demand for their Aurora carbide feed acetylene generators, have reorganized their business into the Aurora Acetylene Company, and changed their place of manufacture to Chattanooga, Tenn. The generators are designed for lighting plants for cities, factories, churches, hotels, residences, stores, schools, mills, &c. A feature of the company's generator is that it feeds small quantities of carbide into a large body of water. It is pointed out that gas is only made as it is used; that there is no waste and no after generation. The company guarantee the material and workmanship in the machine, the amount and quality of gas, and the cleanliness of pipes and burners. They were given the highest award and gold medal at the Charleston Exposition.

Devotion to a Shop Mate.

A short time ago a 15-year-old boy named Otto Bosel, in the employ of the L. Wolff Mfg. Company, was sadly burned by the explosion of a zinc galvanizing tank in their Chicago plant. When the boy was removed to the hospital little hope of his recovery was entertained. His back was burned all over and the skin of his legs and arms was all gone. He had protected his face with his hands, and the skin was burned off them. The efforts to make as comfortable as possible what seemed inevitably his last moments resulted in his gaining strength, and it was found that none of his vital organs were injured. The improvement was such that the physicians became convinced that if a sufficient quantity of human skin could be obtained and grafted on the boy, he would have a good chance for recovery. When this information reached the employees of the factory of the L. Wolff Mfg. Company, 200 of them agreed to allow little patches of their skin to be grafted to his body. Thirty-eight of the younger men in the shop presented themselves at the Norwegian Lutheran Tabitha Hospital, and submitted to the removal of a patch of skin from their arms. The operation will require seven or eight sittings. It is pleasing to note that among workmen striving for a livelihood there is a chivalry which is willing to sacrifice time and comfort for the benefit of a fellow workman. The L. Wolff Mfg. Company of Chicago are to be congratulated on having such a self-sacrificing set of employees.

The Ideal Premier Junior Boilers.

The quickly established popularity of the Ideal Premier boilers, made by the American Radiator Company, Chicago, as attested by the overwhelming demand during the two seasons the boilers have been upon the market, leads the company to believe that the heating trade will equally appreciate the new line of Ideal Premier Junior boilers or tank heaters, of which an illustration is here presented. Upon careful examination of the accompanying cut it will be observed that in this boiler are embodied practically all the features found in the large sizes of Ideal Premier boilers, with such changes in construction as, of course, are necessary to best adapt these tank heaters to the work they are specially intended to perform.



The Ideal Premier Junior Boilers.

Particular attention is invited to the construction of the fire pot, which is of unusual depth. The large center column is connected with the sides by radial arms to secure perfect circulation within the boiler itself. These radical arms and the overhanging central column contain a considerable quantity of water, placed directly above the fire in a manner which develops the highest degree of efficiency. The charging or fire door, as will readily be noticed, is placed unusually high, and as the fire pot is also made especially deep, provision is thereby made for carrying an extra amount of fuel. In consequence there is no occasion for frequent attention to the fire. Neither is there occasion to force the fire and consequently to waste the fuel. This large combustion chamber also permits the employment of all kinds of fuel—hard and soft coal, coke, gas and wood—even of the poorest quality.

As in all types of the Ideal boilers, the fire pot is corrugated, which increases the fire surface and its efficiency, and provides also free circulation of the air at the edges of the fire, insuring greatly improved combustion. The areas of the water ways are correctly proportioned and there is no opportunity for friction or choking of heated currents. The high efficiency of this tank heater is best demonstrated by the rapidity of the circulation therein. Every pound of iron, and all other material entering into the construction of the American Radiator Company's boilers, is not only carefully selected, but also subjected to the most severe tests and analysis. The result is a product of uniform thickness, smooth surface, toughness without brittleness, and, above all, a granular formation of the metal of extremely high heat absorbing efficiency. With ordinary care these tank heaters, the company claim, should endure as long as the building in which they are erected shall stand.

Consisting of so few parts, the boilers can be assembled or erected in less than a half hour. The possession of machinery built specially for the purpose by the company's experts insures that all parts are accurately machined and will assemble perfectly. Every boiler, the company say, is tested at 100 pounds hydrostatic pressure before shipment from the works. The ash pit is of ample capacity and the grates are of a late and improved pattern, giving splendid results. By means of drafts and check dampers the operation of the fire is under control.

This boiler is made in various sizes having capacity for heating from 100 to 550 gallons. The ratings are conservative. Where it is desired to employ a heater of greater than 550 gallons capacity the regular line of hot water house heating boilers are used. The trade are requested by the American Radiator Company to send for their special catalogue of Ideal tank heaters, illustrating the various uses to which they may be placed.

Chicago Convention Delegates.

In order that the delegates from the West may enjoy as much comfort as possible en route to the convention of the National Association of Master Plumbers at Atlantic City, N. J., the Master Plumbers' Association of Chicago are inviting delegates who must pass through Chicago to unite with them and secure, if possible, a special train.

The Chicago delegates are Wm. Redieske, J. B. Bryan, B. J. Hickey, A. C. Hickey, C. J. Herbert, M. J. Corboy, P. Saunders, David Whiteford, L. R. Bain, A. E. Mortimer, Jos. Schener, Thomas Conlin, John Sanders, A. K. Mose, Wm. J. Long, J. L. Corcoran, J. J. Wade, J. W. Brunt, Jacob G. Weber and Joseph Reilly.

The alternates are Henry Breyer, P. J. Foley, R. Coleman, J. H. Boyd, P. M. Murphy, T. P. Culloton, D. J. Rock, T. C. Boyd, J. A. Denniston, M. Farrell, J. G. Roland, Jacob Adler, J. R. Alcock, W. F. Knouss, C. M. Foskett, Charles W. Alcock, Andrew Young, Andrew Morrison, G. A. Larsch and Alfred Jones.

The delegates have organized with Charles T. Byrne, 718 Schiller Building, as chairman, and those who desire to travel with the Chicago delegates and have railroad accommodations reserved for them should communicate with him at once.

Charles C. Breyer, National committeeman; Charles J. Boyd, president of the Illinois State Association, and Charles T. Byrne are also delegates, owing to their official positions. These delegates should make pleasant traveling companions, and doubtless they will secure a sufficient number to accompany them to get special train service and so add comfort to the pleasure of the trip.

QUARTERMASTER W. E. COLE, Fort Barrancas, Fla., will receive bids until July 18 for plumbing and electric wiring the officers' quarters at that place.

NEW SANITARY ENAMELED WARE PLANT.

The United States Sanitary Mfg. Company of Pittsburgh, Pa., announce that they are now prepared to take orders from the trade for porcelain enameled baths and other enameled sanitary ware. The company have just completed a plant which is said to have cost upward of $500,000, and which, it is claimed, is equipped with the most modern appliances procurable. It is located at Monaca, Pa., 28 miles from Pittsburgh, on the Ohio River, and the line of the Pittsburgh & Lake Erie Railroad.

The company are composed of J. W. Arrott, Jr., A. E. Arrott and C. F. Arrott, the sons of J. W. Arrott, who for more than a quarter of a century was connected with the Standard Mfg. Company and the Standard Sanitary Mfg. Company of Pittsburgh, Pa., as president, treasurer and director. Mr. Arrott, Sr., has now retired from business. The "Arrott boys," as they are familiarly known in the trade, are all well versed in the enameling industry. Their father, J. W. Arrott, was one of the pioneers of the business in this country.

The officers of the new United States Sanitary Mfg. Company have issued a circular letter to the sanitary trade, announcing their entry into the business of manufacturing porcelain enameled baths and sanitary ware, in which they claim that their previous experience and knowledge of the business enable them to produce at once the highest grade of enameled goods without going through the period of experimenting usual with new manufacturers in this line. Their patterns, they say, are construeted on the most modern lines and embody the most approved sanitary features. Their porcelain enamel will be manufactured from the best and purest ingredients, and will be of the hardest and most durable character known in the business. The enamel will be applied by the use of natural gas as fuel, rendering it clean, pure and smooth.

The general offices and sales department of the United Sanitary Mfg. Company are located in the Arrott Building, Pittsburgh. The company have in preparation a very elaborate catalogue. They have been working hard since last November and now have ready a large line of new style baths, lavatories, sinks and other goods. They intend to market their product through the jobbing trade only.

The Monash-Younker Valves.

The Monash-Younker Company, Chicago, claiming to be the largest manufacturers of automatic air valves for radiators in the world, and for years manufacturing air valves under various names for different radiator and boiler manufacturers, have discontinued this practice and will in future make valves under their own name and trade-mark and sell direct to the steam fitting trade. This company have a most modern plant thoroughly equipped with especially designed automatic machinery and tools for turning out air valves. To obtain catalogue and discounts the fitting trade are requested to write direct to the company.

New York City Notes.

John F. Black of the firm of Black Bros., 142 St. Nicholas avenue, died of heart failure last Sunday while on a bicycle trip on Long Island.

⁂

Those plumbers whose work is ready are getting as much of it done as possible prior to July 1, when the higher rate of wages goes into effect. The journeymen are to get an advance from $3.75 to $4.25 a day and a Saturday half holiday.

⁂

The Examining Board are very busy with applications for certificates, but the high character of knowledge required to satisfy the board enables only the best of the applicants to pass.

⁂

Among the busy plumbers are Levins & Hennigan, who have a large apartment on Fifty-fourth street, between Broadway and Seventh avenue; Chas. Beck &

Bro., with an eight-story apartment at 42-44 West 120th street; John Rendell, who is plumbing an unfinished job at the corner of Broadway and 112th street, and W. J. Fowler of 2157 Seventh avenue, who has a large overhauling job in refitting the bathrooms in the Hotel Winthrop, Seventh avenue and 125th street.

⁂

The New York delegation to Atlantic City will go with full ranks and probably an overflow on the side, making passengers sufficient to charter a special train.

⁂

The Rockaway Beach contingent were alarmed by the fire that burned several blocks at that resort last Sunday night, and as a result of the work done by them several were laid up Monday from the effects of getting wet and overexertion.

Heating and Plumbing Notes.

D. L. Hood, Westfield, Mass., has been awarded the contract for furnishing the new heating and ventilating apparatus for the local High School at his bid of $7670.

Smith & Cotter, Springfield, Mass., are at work on a contract for plumbing in connection with the Mayor's office in the City Hall.

Scholl & Semple, Youngstown, Ohio, have leased the present site and buildings of the Mahoning Foundry & Machine Company, adjoining the tracks of the Erie Railroad, and expect to take possession in July. At the new site the company will place new machinery and equipment for conducting a general high pressure steam fitting business upon a larger scale than heretofore.

Crook, Horner & Co., Baltimore, Md., bid $5713 and secured the contract for heating and ventilating a new school house on Lakewood avenue and Orleans street.

The Colwell Lead Company, 63 Centre street, New York, are sending to the trade a circular showing a Compression Double Bath Cock, which has a U shaped body, matching the contour of the tub, and having the handles wider apart, so that they can be operated more freely and give more room in the tub. The U shaped body also brings the discharge tube further out, so that a full stream of water can be drawn in a pitcher without spattering. The whole Cock being below the top of the tub permits a board to be laid across the tub when desired. These Cocks are furnished with any style of coupling adapted to any kind of supply pipe, and with or without stuffing boxes.

F. J. Zimmerly & Co. of Fort Wayne, Ind., have opened a branch of their plumbing business at New Haven, Ind., under the management of T. J. Eiler.

George J. Tobin of Plainfield, N. J., bid $11,281 and secured the contract for heating the domestic building of the New Jersey State Reformatory at Rahway.

The William H. Page Boiler Company, Norwich, Conn., have just issued a 32-page catalogue, in a green cover, bearing a design in red, devoted to the extensive line of Steam and Hot Water Heaters and Radiators made by them, and also showing a variety of Steam Fitters' Supplies.

Weldon & Kelly of Pittsburgh, Pa., bid $4926 and secured the contract for plumbing the old portion of the High School Building in that city.

The Andrews Heating Company, 803 Globe Building, Minneapolis, Minn., are sending to the trade a pamphlet bound in imitation of their Home Heater. The back cover shows an elevation of a house in which one of their hot water heating systems is in use. The pamphlet presents half-tone engravings and plans of a number of buildings in which the Andrews heating system has been installed. It is designed to aid the heating contractor in securing contracts for such work.

The plumbing establishment of Thomas H. Lodge, Troy, N. Y., was slightly damaged last week by a fire which started in a box of oakum.

Robert G. Donnelly, who has been quartermaster in charge of the plumbing branch of the construction department at the Navy Yard at Charlestown, Mass., for the past five years, was recently officially appointed to the newly established rank of master plumber.

The Day-Ward Company, Warren, Ohio, are sending to the trade a pamphlet devoted to their fine Enameled Iron Bathtubs. These Tubs are shown in a variety of styles, with different styles of roll rim. Accompanying the engravings are diagrams giving the complete measurements of the Tub, which will be found of great assistance to plumbers in roughing in their work. A feature of these Tubs is the construction of the legs, they being made adjustable in hight to meet the unevenness of floors and so that they can be securely fastened to avoid their falling out.

The helpers of the plumbers working on the Ansonia apartment house at Seventy-fourth street and Broadway, New York, struck one day last week, and the police were appealed to for aid, as a number of the boys had mobbed one of the helpers who had refused to strike.

The plumbing establishment of Herbrick & Lawrence, at 607 Church street, Nashville, Tenn., was visited by a slight fire last week.

Graeber Brothers, Lawrence, Kan., have secured the contract for plumbing, wiring and heating the new railroad office at La Junta, Col.

The contract for a steam heating plant at the barracks at Fort Meade was awarded to Hurley & Co. of St. Paul, Minn., at their bid of $4600.

The National Oil Burner & Equipment Company, Carleton Building, St. Louis, Mo., are issuing a 16-page pamphlet devoted to their apparatus for burning crude oil under boilers and furnaces in factories and for manufacturing purposes. Sectional views, broken views and diagrams are used to show the apparatus, and an illustration is given of the equipment for burning fuel oil in a steam heater for heating a dwelling house. The catalogue will be of interest to those who are called upon to equip plants with fuel burning apparatus in sections where oil fuel is available.

The Putnam Foundry & Machine Company, Putnam, Conn., and Providence, R. I., have recently added to their line of Putnam and Plummer Boilers some portable sectional Boilers with 24 and 30 inch grates, adapted for either steam or hot water heating. It is claimed that the heating surface and flue arrangement of the Plummer Boiler has been increased so as to add materially to its efficiency. The Boilers are provided with new labor saving grates that can be dumped or having a draw center.

The Naugatuck Mfg. Company, Naugatuck, Conn., inform us that their present quarters being too cramped, they are now making alterations and changes in a plant which they have purchased in Union City, a suburb of Naugatuck, where they will have better facilities for making and getting out a varied line of Ball Floats, Copper Air Chambers for pumps, Hydraulic Rams and other specialties of interest to the plumbing and steam supply trade. The new building is well under way and will be ready for operation in July.

W. H. Colegrove, Austin, Pa., has the contract for plumbing five new houses for T. Bayless.

The Philip Carey Mfg. Company of Lockland, Ohio, are manufacturers of Flexible Cement Roofing and Asbestos and Asphalt Materials. Their Lockland plant produces Asbestos and Woolen Felt Coverings. About 12 acres are covered by their factory buildings. They have recently built a large three-story brick building to supply the demand for their Roofing, Roofing Paint and similar materials. The company also manufacture Asbestos Sectional Steam Pipe and Boiler Coverings, and 85 per cent. Magnesia Steam Pipe and Boiler Coverings, their factory at Corsons, Pa., being devoted exclusively to the production of the latter. This plant commenced operations during the early part of last year, but was destroyed by fire on June 9, 1901. Rebuilding was immediately commenced, but the new plant was only placed in operation about three months since. They have, however, shipped about 50 carloads of these goods since the resumption of business.

An important improvement has been made in the Forbes Die Stocks, manufactured by the Curtis & Curtis Company of Bridgeport, Conn. This is the adjustment of the shell or casing so that wear of gear may be taken up. In many machines for cutting and threading pipe the gear wears itself loose in the shell after a time, so that a perfectly straight thread is not easily obtained. This difficulty is wholly overcome in the new die and stock. The dies used are cheaper than solid Dies and much more durable. All parts of the machine are interchangeable.

The Hope Ventilating Company, Kansas City, Mo., manufacturers of Cone Ventilating Fans, Steel Plate Blowers and Exhausters and Hot Blast Heating Apparatus, have been incorporated under the name of the Hope Blower Company for the purpose of increasing their facilities and the addition of new lines of manufacture.

The Stover Mfg. Company, Freeport, Ill., have experienced a phenomenal business in Wind Mills thus far this year and although they are now turning out more than 100 per cent. more goods than a year ago they are not able to fill more than one-half of the orders booked. They have called their traveling men from the road, and have ceased all efforts to stimulate trade until they can make the factory end more nearly correspond with the demand. Future prospects are exceedingly bright and assure all the business they can possibly handle.

T. R. Warburton, Port Gibson, Miss., advises us that his branch shop at Fayette, Miss., was burned to the ground, together with nine other buildings, on May 29. Mr. Warburton does a general plumbing, tinning and roofing business at both Port Gibson and Lafayette.

N. Rubenstein, Houston street, New York, has recently patented and placed on the market a Seat Attachment for use in connection with Short Hopper Closets.

Heating contractors for large work will be interested in a pamphlet devoted to the Tread-Kill Grates, made by M. H. Treadwell & Co., 95-97 Liberty street, New York. The catalogue shows views of the different styles of Grate made by the house, adapted for furnaces of any size and for any use, particularly under large horizontal, tubular or other styles of steam boilers. The firm also make Boiler Fronts suited for their Grates of different sizes. The Grate consists of rocking bars, which are set in a frame and operated by means of levers from the front. They are adapted to different varieties of coal and provided with air space to facilitate the combustion. The character of the Grate may be understood when it is pointed out that many of the parts which are called upon to stand strain are made of malleable iron and the shaking lever and rods of forged steel. It is further claimed that the Grate is perfectly well fitted, no part of which is made to meet cheap competition, but rather to meet the best on the ground of merit alone.

F. S. Shields, secretary of the Board of Sewerage and Water, 602 Carondelet street, New Orleans, La., will receive bids until August 12 for furnishing and erecting engines with centrifugal pumping machinery, boilers, dynamos and transmission lines and other appurtenances for the equipment of the central steam driven pumping and generating station, and for the transmission lines to seven substations, and for motors and pumps for the automatic operation of these substations; also, for the equipment of one small independent steam driven pumping station, 14 centrifugal pumps, having a capacity of 12,000 cubic feet per minute, the range in lift varying from 7 to 56 feet. After June 20 specifications can be seen at the office of Hering & Fuller, consulting engineers, 170 Broadway, New York City.

Baker, Smith & Co., New York, who put three Royal Hot Water Heaters in the "building of primates," otherwise monkey house, at the Zoo, in Bronx Park, last year, are now putting two No. 60 Royal Hot Water Heaters in the lion house.

The master plumbers of Troy, N. Y., through their attorney, have served notice on the city administration that permits to tap sewers and water mains are being issued to persons who do not possess certificates of competency, and that the law in this respect is being violated. This is held to be an injustice to plumbers who have passed an examination and taken out a license.

N. M. Dunn died at his home, 208 Lexington avenue, Brooklyn, N. Y., on June 3. He was connected with the plumbing firm of P. & L. Dunn, and was born in New York City in 1834. Mr. Dunn is survived by three sons and two daughters.

George S. Hughes, who organized the division of House Drainage and Plumbing Inspection of the Bureau of Health of Philadelphia 16 years ago, and who has been its chief ever since, died on June 1 at his home, 1431 North Park avenue, aged 60 years. He had been identified with the plumbing and gas fitting trade during his life. He served four years during the war in the Fifth Pennsylvania Cavalry, and at the time of his death was president of the Regimental Association of the survivors. He is survived by his widow and one daughter.

Robert Scott, Philadelphia, has the contract for installing a $25,000 low pressure steam heating and ventilating apparatus for the Widener Memorial Home for Crippled Children at Tioga. He has also contracts for installing a $1500 hot water heating apparatus in the house of Charles W. Henry, Chestnut Hill; a $2200 low pressure indirect steam heating apparatus in the house of Lenore G. McCall, Forty-second and Walnut streets, and a $1900 hot water heating apparatus for Robert R. Logan, 212 South Eighth street.

State Vice-President Robert W. Kyle met with E. L. Martin, Russell Smoot and John Mayhew at Parkersburg, W. Va., on Wednesday for the purpose of organizing a State association of master plumbers.

The Metal Worker acknowledges the receipt of an invitation from W. Emmet Crosby, executive clerk of the National Association of Master Plumbers, to attend the commencement exercises of the Kansas City School of Law on June 11, at the Century Theater in Kansas City, Mo. Mr. Crosby has devoted some time to the reading of law for several years, and will doubtless soon make application for admission to the bar.

The Thomas P. Ford Company, 81 Centre street, New York, are sending to the heating and plumbing trade a 32-page catalogue devoted to the Ford Steam and Water Specialties. These consist of Automatic Pump Governors, Damper Regulators, High and Low Pressure Steam Reducing Valves, Steam Traps and Steam Separators, Boiler Feed Regulators, Force Draft Regulating Valves and Water Pressure Reducing Valves, besides some other standard appliances. Sectional views and diagrams are used with the general views, to make the construction and use of the various devices readily understood. The text is a terse explanation and includes a price-list of the various devices presented.

New Firms and Changes.

J. F. Noonan, formerly employed by the Selvey-Wyckoff Company as foreman on their big contract in connection with the locomobile factory in Bridgeport, Conn., has recently opened a shop under the Russell Hotel at 226 Main street, Springfield, Mass.

Fred. Hathaway of Rochester, Pa., and E. E. Pagett of Pittsburgh have entered into a partnership in the plumbing business in the shop on Brighton avenue, Rochester, Pa., formerly occupied by George Reeb.

Jenkins & Wallace have purchased the plumbing business of J. E. Galnett, at Franklin, N. H.

The Alden Sheet Metal Working & Plumbing Company of Brockton, Mass., have been incorporated with a capital of $5000. George Q. Clifford is the president and Charles L. Clifford treasurer of the company.

The Newman Mfg. Company have been incorporated at Elizabeth, N. J., with a capital of $5000, by J. W. Newman, Charles Brown and George W. Orthey, to manufacture Steam Specialties.

The James D. Ryan Heating & Ventilating Company have been incorporated at St. Louis, with a paid in capital of $10,000, by S. Ryan, Wm. M. Stanton and James D. Ryan.

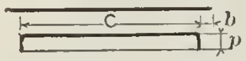
The National Disinfectant Company of Jersey City, N. J., have been incorporated, with a capital of $600,000, by R. N. Hazard, R. W. Browne and Samuel S. Hawk, to manufacture disinfectants.

Cold Working Sheet Metal in Dies.*

BY J. D RIGGS. PITTSBURGH, PA.

IN TWO PARTS. PART I.

During the last half century a marked progress has been made in the art of working sheet metal. The introduction of more elaborate machinery and tools, and the change from hand work to die work, has brought about some very radical changes, both in the design of articles made of sheet metal and in the cost of producing them. The development of this art has led to the use of sheet metal in the construction of a great many articles formerly made of wood or cast metal. As an example of what we often meet with I may mention that while visiting Cincinnati two years ago, I was shown parts for the body of a violin which had been stamped in dies from an aluminum bronze. These violins were said to be excellent instruments.



THE METAL WORKER

Fig. 1.

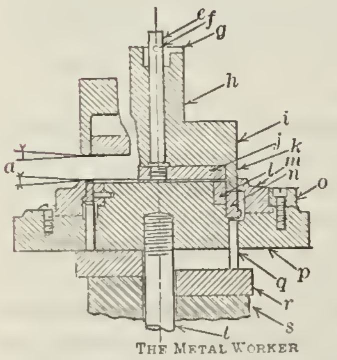


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Fig. 2.

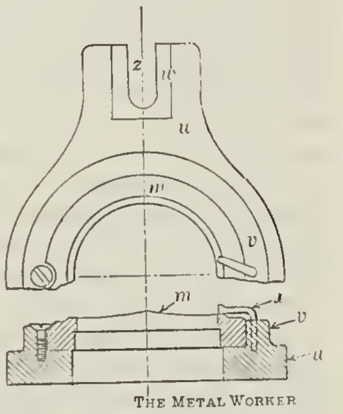

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Fig. 3.

Cold Working Sheet Metal in Dies.

Dies operated by presses do a large share of the work of manufacturing sheet metal goods, and are useful in cutting out irregular forms cheaply and accurately, but their usefulness does not end here, for an endless variety of bending, drawing, and forging operations may be done by them, some bending or drawing operation often being combined with the cutting out and perfomed together with it. One of the most common pieces produced in dies is the end of an ordinary tin can. Referring to Fig. 1, this piece is cut into a round disk and then the annular portion, *b*, is drawn to the cylindrical form, *p*.

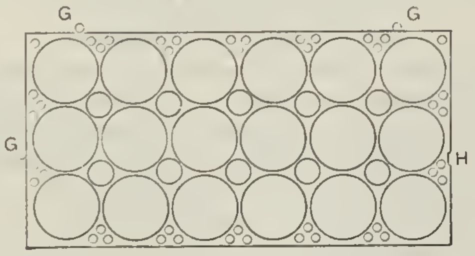

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Fig. 4.

The problem of finding the depth of cup which a disk or " blank " will make may be solved by equating areas of cylindrical ring, *p*, and annular ring, *b*.

$$\pi Cd = \pi (C + b)\, b = \pi Cb + \pi b^2$$

Reducing and allowing for stretch

$$p = b + \frac{b^2}{C} + s$$

And as the corner is always more or less rounded, we may say

$$p = b + \frac{b^2}{C} + s + \frac{r}{2}$$

where *s* represents the stretch or elongation of the metal in the edge, *p*, and varies from 0 to 5 per cent. of *p*, in tin plate or steel; *r* represents the radius of the rounded corner. The diameter of the blank is represented by

$$C + 2b$$

Fig. 2 shows a typical die as used in sigle acting presses for forming can ends and similar articles. The right side shows the die closed, while the left side shows the relation of parts when open. The hardened steel ring, *m*, and the steel edge, *k*, of the punch, *i*, cut out the disk or blank. As the press continues to descend, the ring, *n*, clamps the annular part against the face of the punch, *k*, and produces a considerable tension in the metal as it is drawn over the central portion, *l*. As the die opens the ring, *n*, " strips " the finished piece up from *l*. Ring, *n*, is actuated by a spring through pins, *g*, and has adjustment by means of a nut on the lower end of the stud bolt, *t*. Both rubber and steel springs are in use, but either should be amply long.

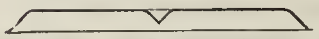

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Fig. 5.

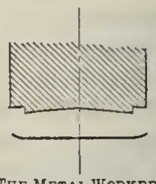

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Fig. 6.

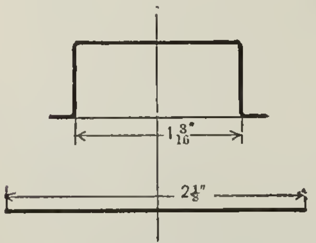

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Fig. 7.

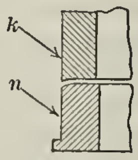

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Fig. 8.

The die (collectively) consists of the die and the punch. When dies are required for cutting only, the die may be made as shown in Fig. 3.

A concern extensively engaged in the manufacture of tin cans have been using for some time dies similar to that shown in Fig. 2, in " gangs." They leave off the stem, *h*, from the punch and recess the body, *i*, of several into a large plate, and instead of the small plate, *p*, a large one is used with many dies set into it. In this manner gang dies are made to cut the alternate large disks shown in Fig. 4, and the sheet is then turned over from right to left, and the remaining large disks cut and formed into can ends. The die rings, *m*, Fig. 2, interfered with cutting all the large disks at one stroke. The remaining sheet is then laid aside, to be afterward put into another gang die, which cuts and forms the remaining disks into can caps, shown in Fig. 5, and button blanks, shown in Fig. 6. The die for each group of three small disks, and corresponding to *m*, Fig. 3, is made in one piece, which allows of cutting and forming the 52 pieces at one stroke of the press. Although this gang die formed two distinct articles, it did not mix them together, as the can caps came out on top of the die and slid back in the inclined press, while the button blanks formed on the peculiar punch shown in

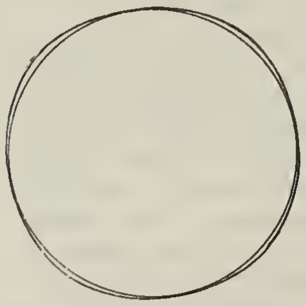

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Fig. 9.

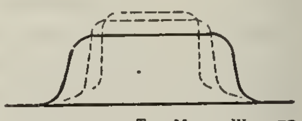

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Fig. 10.

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*Presented at the Boston meeting (May, 1902) of the American Society of Mechanical Engineers.

Fig. 6, and went through the die. It will be observed that this sheet of tin is not standard size, but is 11 by 22 inches, which was a very difficult size to get 15 years ago. Gauges, *G*, Fig. 4, and notching die, *H*, were so arranged that the irregularity of the sheets would not be reproduced and interfere with using the second set of dies.

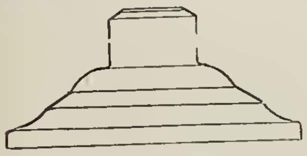
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Fig. 11.

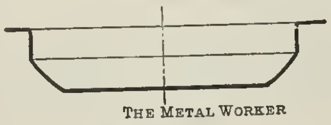
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Fig. 12.

The depth which may be drawn at one operation is commonly expressed as equal to half the diameter for small cups and one-third or one-fourth for larger vessels. Fig. 7 shows a tin cup formed at once in a die represented by Fig. 2, with the exception shown in Fig. 8. The radial edge of the cup was required, and less than a square corner for the cutting edge of the punch was desirable. This concave face of the punch, *k*, together with a hardened and nicely polished ring, *n*, gave excellent results.

Where a depth greater than can be drawn in one operation is required, or a small boss is wanted near the center of a sheet, it becomes necessary to resort to two or more operations, forming a larger and shallower piece first, and then reducing this to the desired form.

An interesting example of this class of work was shown in operation at the Pan-American Exposition. The can top shown in Fig. 11, ready for rolling a thread at *t*, was first cut and formed to the shape shown in Fig. 10, by a die of the type shown in Fig. 2. It then passes through some four other dies and through the forms indicated by dotted lines in Fig. 10, the last one of these dies cutting the hole in the top, trimming and turning the outer edge and shaping it up generally, but not materially reducing the diameter of the boss.

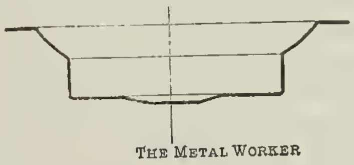
THE METAL WORKER

Fig. 13.

Another example of this reducing is found in one form of bicycle front fork crown, where a boss is formed to which to attach the fork stem.

In deep drawn work the edge becomes irregular, and is often trimmed again before finishing the piece. In Fig. 9 the outer line is drawn directly from the piece shown in section in Fig. 10, while the inner line is a circle drawn to illustrate the peculiar irregularity of the edge, showing as is common four high points. I attribute these high and low points to the rolling mill which rolls the sheets.

Passing to work done in double acting presses, Fig. 12 shows a piece formed of tin plate in a die shown in Fig. 15, where the outer punch, *b*, descends, cuts out the blank, and, during its "dwell," clamps the disk against the ring, *g*, while the inner punch descends just far enough to give the required shape. This piece, Fig. 12, is then put into a die, Fig. 16, where the outer punch, *i*, clamps the tapering portion against the die, and the inner punch descends just far enough to produce the piece shown in Fig. 13. This piece is next put through a single acting die, which cuts the holes *o* and *p*, and rounds the base at *q* somewhat more. The piece is now put into a lathe, Fig. 14, which carries a pair of rotary cutters, *r*, on the back, and a curling roll, *n*, on the front end of the cross slide. After this lathe has trimmed and curled the edge the piece goes into a bath of hot palm oil to have its coat of tin reshined, and is then ready to have other pieces attached and form the oil well of a tubular lantern.

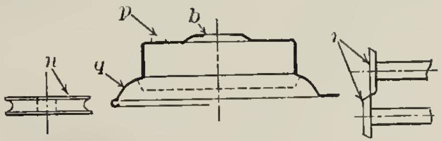

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Fig. 14.

The trimming cutters, *r*, and the curling roll, *n*, are used in a variety of ways, either together or separately. Three of these rolls are often put into a body and form a chuck, to be used in a machine similar to a drill press, to curl the edge of pails and round vessels. If the dies shown in Figs. 15 and 16 had been made open bottom, and the inner punches had been adjusted lower, the piece produced would have been a cylindrical cup instead of as shown in Fig. 13.

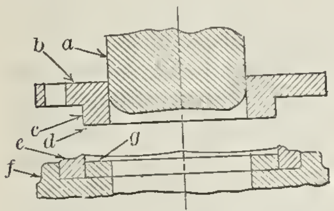

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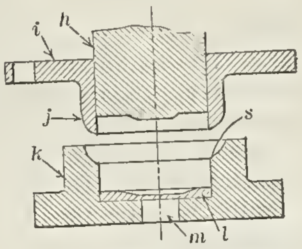
Fig. 15.



THE METAL WORKER

Fig. 16.

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The Amalgamated Association.

An important step was taken last week by the officials of the Amalgamated Association of Iron, Steel and Tin Workers in admitting to membership in the association the local lodges of the American Federation of Labor in the Eastern Iron and steel mills which were organized during the strike about a year ago. This means an increase in membership of the Amalgamated Association of something like 15,000 men. It is understood that these lodges were organized by the American Federation of Labor after the strike of last year, with the understanding that they would eventually be taken into the Amalgamated Association. Previous to this action the association had less than a dozen lodges in affiliation with it east of the Alleghany Mountains. This step is regarded as of doubtful wisdom by many in the Amalgamated Association. It has been tried before, experimentally, with unsatisfactory results; because the workers in the East do not receive the same wage rate as those in the West. It is regarded as likely, however, that no attempt will be made to establish a uniform rate of wages for East and West at present, as such an attempt, it is thought, would be likely to involve the Amalgamated Association in labor difficulties.

A number of wage conferences between the officials of the various iron and steel companies which recognize the Amalgamated Association and the wage committees of that association will be held during the present month. These include conferences with the Republic Iron & Steel Company, the American Steel Hoop Company, American Tin Plate Company and American Sheet Steel Company. It is understood that whatever arrangements are come to with the Republic Company in regard to the ratification of the wage agreements will be endorsed by the various constituent companies of the United States Steel Corporation. No difficulty is looked for, these conferences being merely of a formal nature, in order to officially close the several wage agreements for the coming year.

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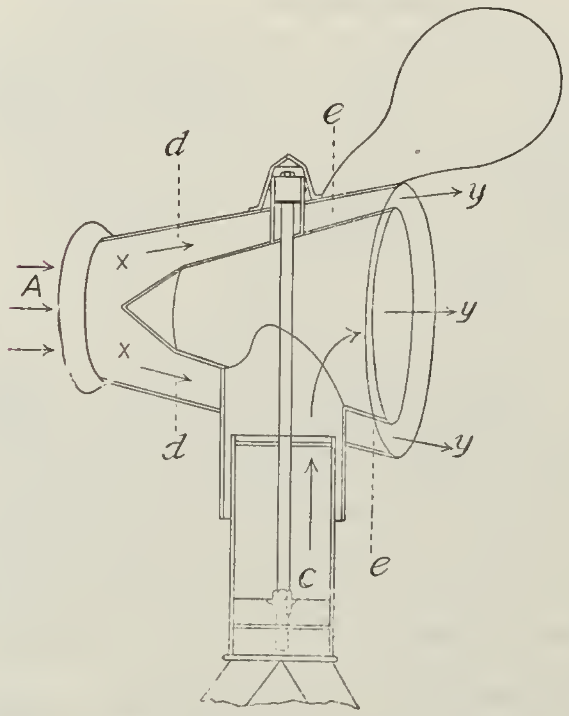
The West Carnegie Sheet Steel Company.

The principal contracts have been awarded for the new plant of the West Carnegie Sheet Steel Company, who will erect a six-mill sheet plant at West Carnegie, Pa. The contract for two 25-ton basic open hearth furnaces has been given to E. E. Erikson of Pittsburgh. The Gruson Iron Works of Philadelphia will furnish the mills, including a combination blooming and sheet bar mill, and six stands of hot rolls, including one stand of rolls 44 inches long, four 38 inches long and one 32 inches long, all being 26 inches in diameter; also two cold rolls 44 and 38 inches long respectively. The machinery will be driven by three Hamilton-Corliss engines made by the Hooven, Owens & Rentschler Company, and 1500 horse-power of boilers of the B. & W. type will be furnished by the Erie City Iron Works. The buildings will be erected by the Fort Pitt Bridge Company, Pittsburgh, and the Morgan Engineering Company will furnish an electric crane. The main building will be 340 feet long and 140 feet wide at the open hearth end and 120 feet wide at the sheet mill end. The hot and cold mills will be arranged together in two trains, with three hot mills and a cold mill on each side of the pair of engines. Work will be begun on the contracts at once, but it is not expected that the plant will be ready for active operation much before the first of next year. The company will manufacture common sheets exclusively. It is understood that D. R. Torrance, City Treasurer of Pittsburgh, will be elected president; John F. Steele, treasurer, and W. H. Skivington, secretary, of the company. George C. Brown, who has designed the mill, will be the general manager. The offices of the company are at present located at 317 to 319 Park Building, Pittsburgh.

The Auto-Force Ventilator.

It would be inappropriate to say of ventilators and chimney caps, as the wise man said of the making of books, that there is no end, for these devices are always attached to the top end of the chimney or some other outlet for gases and air. In the accompanying illustration is given a sectional view of another new production in this line, the Auto-Force ventilator, made by the Nickerson Force Draft Ventilator Company, 303 Sudbury Building, Boston, Mass. This ventilator consists of a revolving cowl composed of an interior and outer cone. The inner cone connects directly with the chimney or space to be ventilated, while the point of the outer cone is made so as always to face the wind by means of a tail piece attached to it. It is claimed that in operation the air passes in at A and increase in velocity until its exit at *y*, which acts in somewhat similar manner to a steam injector, creating a vacuum at the mouth of the smaller cone and causing an upward rush of air or smoke through the pipe C. It is also pointed out that the inner cone, becoming heated, creates a draft through the outer cone and aids the draft, even when the outside air is quiet. These ventilators have been used with success on railroad cars, dining rooms, tunnels, mines, schools, theaters and chimneys. The company issue a 20-page pamphlet thoroughly explaining the construction and operation of the device.



The Auto-Force Ventilator.

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The J. Wood & Brothers Company, Conshohocken, Pa., have increased the wages of the employees at their mills 10 per cent.

PATTERN FOR ICE CREAM MOLD.

(Without allowance for Laps.)

An article which can be made from IX tin or No. 24 galvanized iron, and which is now in season, is an ice cream mold (brick form). In Fig. 1 is shown a perspective view of the mold with cover. The corners can either be riveted, as shown by C and D, or double seamed. The seams should be soldered on the inside in such a manner that the inside surface will be as perfectly smooth as if the mold were stamped in one piece. While some molds are made perfectly square—that is, no bevel is given to the sides—the pattern described below is cut on a bevel to allow the molded cream to slip out easily.

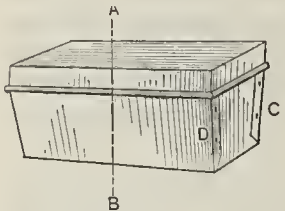

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Fig. 1.—Perspective View of Finished Ice Cream Mold.

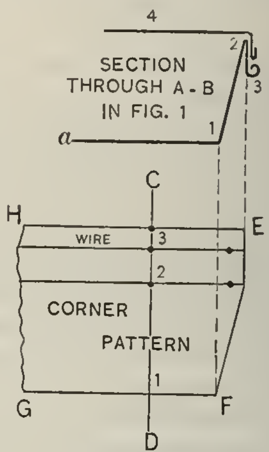

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Fig. 2.—Method of Obtaining Pattern for One Corner.

Pattern for Ice Cream Mold.

In laying out the pattern it is not necessary to draw the entire form, but only one corner. Providing that all the sides have the same bevel, this one corner pattern is all that will be required to obtain the pattern in one piece. In Fig. 2 let 1, 2, 3, 4 be a section taken through A B in Fig. 1, 1, 2, 3 in Fig. 2 being the body of the mold, with wire at 3, while 4 indicates the cover. For the pattern for the corner draw any line, as C D, at right angles to *a* 1, upon which place the stretchout of 1, 2 and 3 in the section, as shown by 1, 2 and 3 on C D, also allowing for wire, as shown. At right angles to C D and through the small figures draw lines, as shown, which intersect with lines drawn at right angles to *a* 1 from intersections 1, 2 and 3 in the section. Trace a line through points thus obtained. Then will E F G H be the corner pattern.

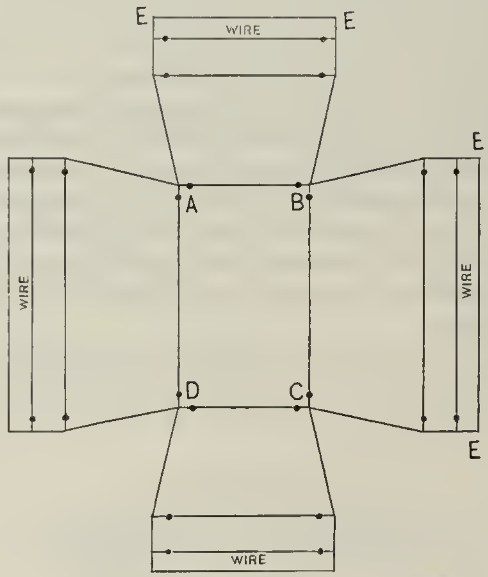

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Fig. 3.—Pattern for Mold in One Piece.

Now, assuming that the bottom of the mold is to be of a given size, as shown by A B C D in Fig 3, around which the sides are to be constructed, take the pattern G F E in Fig. 2, and, laying the line G F successively against the corners and lines A B, B C, C D and D A in Fig. 3, turning the pattern right and left as required, mark off the miters E, E, E, &c., as shown. Then will the pattern shown in Fig. 3 be the full pattern for the mold in one piece. Allowance must be made for seaming or riveting. The pattern for the cover 4 in Fig. 2 is so simple that a description is omitted.

The Wheeling Roofing & Cornice Company.

The Wheeling Roofing & Cornice Company of Wheeling, W. Va., advise us that it is their intention to erect a sheet mill and open hearth furnace in connection with their new plant now under construction at New Martinsville. The company have purchased 45 acres of ground, in addition to the 5 acres donated by the city of New Martinsville, on the main track of the Ohio River Railroad. They are erecting a tin mill, 60 x 320 feet, containing eight pots, with provision for 12 more, all of improved duplex pattern, producing 120 boxes per 24 hours, and equipped with Taylor's patent automatic trimming machines; galvanizing shop, 70 x 320 feet, equipped with four pots, two Mesta picklers, four sheet straighteners, weighing machines, &c.; corrugating shop, 60 x 200 feet, equipped with special machinery, the invention of F. Taylor, general manager; conductor pipe shop, 60 x 200 feet, with a capacity of 200,000 feet per 24 hours; eave trough shop, 50 x 150 feet, equipped with Taylor patent machinery, producing 500,000 feet per 24 hours; hanger shop, 36 x 250 feet, in which will be made cut offs, elbow miters and other small articles, and a building, 180 x 400 feet, for stamped ceiling and ornamental stamped metal work, equipped with machinery to stamp in one operation sheets that are now stamped in four operations.

The Uses of Coal Tar Products.

The best known and most largely used felts and paper for roofing and sheathing purposes are today manufactured from coal tar, or materials resulting from its distillation. It is a matter of common knowledge that coal tar is produced at gas works in the operation of manufacturing illuminating gas from coal. The direct distillation of coal tar produces first, light oils, or oils heavier than water; and finally, a residuum commonly sold in the market as coal tar pitch.

The latter material is now used for a large variety of purposes, owing to its high water proof and nonconducting properties. Roofing and building papers are saturated and lined with it. A perfectly water proof building paper is produced by cementing together two sheets or ordinary dry paper with a layer of coal tar pitch, not exceeding 1-100 inch in thickness, a better quality having three layers of paper and two fillings of pitch. The same dry paper cemented to a wool felt with pitch produces a water proof deadening felt which is the best nonconductor of sound of any felt that so far has been produced.

That materials so produced have proven satisfactory is attested by the largely increased rate of consumption in the past ten years. Their manufacture was formerly confined to two or three of the Eastern cities, whereas to-day large factories are located in almost all of the large cities East, West and South, many of which, however, following the example in other trades, have been consolidated into fewer and more compact concerns, although new competition is continually entering the field.

All the advantages to be derived from the use of these materials are known to comparatively few people, while some of the advantages are known to many. Gravel, slag and ready roofings, water tight floors and cellars, street pavements and sidewalks, are constructed from them in their various combinations. Dead oil produces lampblack and is used under name of creosote oil for the saturation of timber, to prevent decay.

A meeting of the stockholders of the Sharon Steel Company, Sharon, Pa., will be held in August, for the purpose of voting upon an increase in the capital stock of the company, from $5,000,000 to $6,000,000. The Sheet and Pipe mill departments of the concern will be placed in operation early in August.

FLASHINGS.

All the machinery for the new plant of the Marietta Sheet & Tin Plate Company, Marietta, Ohio, has been contracted for and will probably be placed in position during July. The company have decided to enlarge the plant beyond the original plans, the main building being extended from 260 feet in length to 300 feet, and the tinning plant from 200 to 300 feet. It is expected that the plant will be in operation by September 1.

John F. Budke has resigned as president and manager of the Parkersburg Iron & Steel Company, Parkersburg, W. Va., and will return to Canonsburg, Pa., where he is organizing the Budke Iron & Steel Company, to erect a six-mill Sheet plant with eight puddling furnaces and a three-high Bar mill. It is probable that the plant may be built at Shannopin on the Lake Erie road, 22 miles from Pittsburgh, where Mr. Budke has secured options on 157 acres of land.

John Collins, superintendent of the Old Meadow plant of the American Sheet Steel Company, at Scottdale, Pa., died on May 25 at his home in that town, aged 57 years. Mr. Collins, who was a native of England, came to this country in 1887 and located at Scottdale, where he had been engaged in the manufacture of Steel Sheets ever since.

The Maryland Sheet & Steel Company, Cumberland, Md., have placed an order with the George A. Hogg Iron & Steel Foundry Company, Pittsburgh, Pa., for a 38-inch roll lathe.

The plant of the American Tin Plate Company, at Ellwood City, Pa., was closed down last week for extensive repairs.

The Tin Plate mills of the N. & G. Taylor Company and the plant of the Maryland Sheet & Steel Company of Cumberland, Md., were shut down last week for a few days for repairs and improvements.

The Indianapolis Sheet Metal Company of Indianapolis, Ind., have been incorporated with a capital stock of $10,000 to manufacture Tin and Sheet Metal Specialties.

The Carnahan Stamping & Enameling Company of Canton, Ohio, are figuring on an important enlargement of their enameling plant. For this purpose they propose to invest in the plant an additional capital of about $500,000, which will be devoted to the manufacture of Enameled Ware. When complete the projected works will be one of the largest of its kind in the country and will turn out an infinite variety of patterns, ranging from 60-gallon Preserve Kettles down to Enameled Iron Spoons. The company are closely allied with the Berger Mfg. Company, the principal officers of the two companies being the same.

The Hampden Cornice Works, Springfield, Mass., have been awarded a large contract for metal work, including Copper Roofing and Skylights, on the new Crane Natural History and Art Building, at Pittsfield, Mass.

The New England Steel Roofing Company suffered a loss of $8000 by the fire in Day Buildings, Worcester, Mass., the company's quarters being thoroughly gutted. The loss is covered by insurance.

The American Sheet Steel Company are dismantling their Russia mill at Niles, Ohio, which consists of two Sheet mills, one muck train and 23 puddling furnaces. The plant has never been operated since the organization of the American Sheet Steel Company. The Falcon mills of the American Sheet Steel Company, also at Niles, have been closed down for the present.

The Decatur Cornice & Roofing Company, New Decatur, Ala., expect within the next few months to take possession of their new factory, the capacity of which, they advise us, will be six times that of the plant now occupied. The company state that they are unusually busy for this season of the year, and the prospects for the remainder of 1902 are most encouraging.

The Columbia Can Company, St. Louis, Mo., recently incorporated, will erect a large plant at 501 North street, which will be equipped with the latest improved machinery. The officers are Herman F. Westerneck, president;

Fred. L. Westerbeck, Jr., vice-president; Emil J. Westerbeck, secretary and treasurer, and Charles Doermann, manager.

The report is incorrect that an order has been issued from the New York office of the United States Steel Corporation to the effect that the mills of the W. Dewees Wood works, of the American Sheet Steel Company, at McKeesport, Pa., would not be started up until Monday morning at 4 o'clock instead of Sunday evening, the practice heretofore. No such order has been issued, nor has there been any change made in the time of starting up this plant.

The Youngstown Iron Sheet & Tube Company, who recently bought Claire Furnace at Sharpsville, Pa., from Pickands, Mather & Co., will take possession of the stack on June 10. The furnace is turning out about 250 tons of iron per day, and this metal will be used in the new basic open hearth steel works now being built by the Youngstown Company at Hazelton, Youngstown.

The Edwards Mfg. Company, 119 Sycamore street, Cincinnati, Ohio, are sending out a new catalogue showing some of the goods which they manufacture in the line of Roofing, Eave Trough, Conductor Pipe and Fittings. These include Roll and Cap Steel Roofing, Double Seam Roll Roofing, Pressed Standing Seam Steel Roofing, V-Crimped Roofing, Imitation Weather Boarding, Pressed Zinc Siding, Corrugated Sheets, painted or galvanized, Corrugated Siding and Ridging, Beaded Ceiling, Ridge Cap, Galvanized Eaves Trough, Eaves Trough Ends and Miters, Conductor Pipe, Elbows and Shoes, Conductor Strainers, Conductor Pipe Hooks and the Edwards Wire Eaves Trough Hangers. The company state that their large catalogue of ornamental material, including Cornices, Skylights, &c., will be mailed to any one interested, upon application.

The Eruption of Mt. Pelee.

It is natural that the extraordinary convulsion of nature in the recent volcanic explosion on the island of Martinique should arouse great interest in the question of the cause of an occurrence so unprecedented in the later history of the world. Scientists are giving much thought and study to the matter, and a number of them are now investigating on the spot. Particular difficulty has been found in explaining the vast sheet of flame that seems to have accompanied or closely followed the explosion, and which swept over the city of St. Pierre in a tornado of fire, destroying every living thing and burning up even the buildings and other inanimate objects. The most plausible view of the cause of the phenomenon so far advanced seems to be that offered by Professor Verrill of Yale University, who is of the opinion that by some means sea water, at great depth and under pressure due to great head, got access to the subterranean fires of which Mount Pelée was once an outlet. Encountering there an intense temperature, the water was vaporized, superheated and decomposed, separating primarily into hydrogen and oxygen. Thus dissociated, the hydrogen would remain free, but the oxygen would seek association with carbon, forming carbonic oxide. Besides hydrogen and oxygen, sea water contains chlorides and bromides, which, on gasification, would be converted into chlorine and bromine. The chlorine might unite with hydrogen, forming hydrochloric acid. These inflammable gases, suddenly ejected with great violence, would be calculated to produce the effects manifested. The carbonic oxide or the hydrochloric acid would quickly poison and suffocate all who breathed them in quantities, and the explosion and ignition of the gases would explain the sheet of flame which burnt the clothes and flesh of the victims.

* * *

For the first time in six years the entire installation of the Niagara Falls Power Company, at Niagara Falls, N. Y., was shut down early on the morning of Sunday, June 1, and the great turbines and dynamos stood still. The stoppage was to enable an inspection of the tunnel and wheel pits, and to knock out the bulkheads between the two wheel pits, thus permanently connecting them. The time selected for the stoppage was shortly after midnight on Sunday morning, when the demand for power was the least. A thorough inspection of every part of the tunnel was made by the engineers and it was found to be in perfectly sound condition. All the industries supplied by the power plant were necessarily shut down during the inspection.

THE ADVERTISING END.

BY W. A. F.

In these days of advanced business methods and keen competition the man who would succeed must give some attention to the subject of advertising in some form or other. Almost every business man realizes this, although the statement is frequently made that a great deal of the money spent in advertising is literally thrown away.

This, no doubt, is true in a measure; but, in a majority of instances where no benefit is derived the advertiser is at fault. The time honored custom of putting a card in the local paper and letting it stand unchanged in any particular for months, and even years, is not a judicious expenditure of money.

It is doubtful if the men engaged in any line of business are, as a whole, more closely wedded to the perfunctory, humdrum style of advertising mentioned than those engaged in the plumbing and tinning trades. The writer recalls one who kept a standing "ad." in a local paper for a long term of years without any alteration whatever. Some names of parties well-known in that locality were given as references, and long after some of them had passed from this vale of tears the advertiser continued to pay to have their names published each week among the list of well satisfied customers. Of course, such advertising does not pay. People will not read old advertisements, but they will read new ones and will favor with their patronage the man who is enterprising enough to make an effort to attract attention to his business.

Only ocasionally is there a plumber or tinner who gives thought and attention enough to this subject. Too often he relies on the quality of the work he does to advertise his business. A reputation for doing good work is of course desirable, but it will do little more than retain the custom one already has, for the reason that a customer, no matter how well satisfied, will not, as a rule, go out of his way to boom some other man's trade.

It is not necessary for a mechanic to be an expert in the art of advertising in order to make his investments along that line paying ones. Neither is it necessary to use a vast amount of space in order to attract atention. Many people will read a short "ad." who will not read a long one. If one has original ideas, and gives some time to it, he can in a comparatively short time interest a large circle of readers, who will accustom themselves to looking for his latest effort; and, from being interested in what a man says about his business, to becoming a customer of his is but a short step.

If a weekly newspaper is used as an advertising medium the "ad." should be changed every week, so that the public will know the advertiser has not died or moved away since the week before. In this way even an indifferent workman can keep himself very much in evidence.

Another method of attracting favorable notice, but which through neglect too often attracts the other kind, is the arrangement of the plumber's shop front. If he conducts a store in connection with his shop, some attention is generally given to making a front window display. But if not, many neglect to make any effort to attract the attention of the passing public. If the windows are kept clean enough to see through, and the newest and brightest goods are kept in front, and frequent changes are made in the arrangement of them, they will be looked at and commented on to the plumber's advantage.

No matter what method of advertising a tradesman adopts as the best for his purpose, he should keep it up every season of the year, and not do it by fits and starts.

THE LETTER BOX.

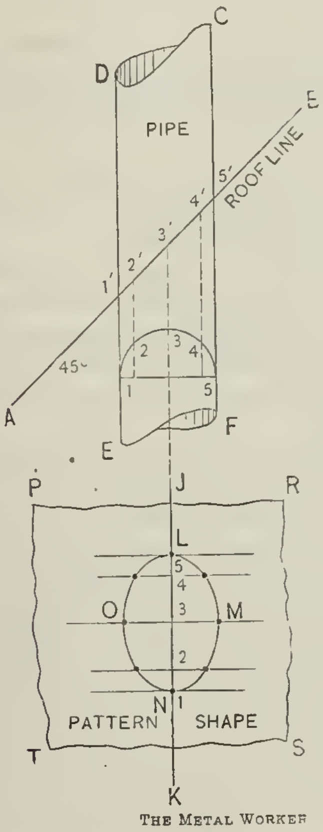
Inquiries in regard to practical questions of general interest are invited, in reply to which we shall be glad to receive suggestions and information from our readers.

Correspondents are requested in all cases to give their names and addresses, which will not, however, be published or disclosed without their consent.

PATTERN FOR ROOF FLASHING.

From E. S. P.—Will you kindly inform me through the columns of *The Metal Worker* how to strike out the patterns for roof flashings for soil pipes of 4 and 2 inch diameters on 45 and 30 degree roofs respectively?

Answer.—In this connection it may be proper to remark that it makes no difference what pitch the roof has or what size pipe passes through the roof, the principles hereinafter explained being applicable to any case. In the accompanying illustrations let A B represent the roof line at an angle of 45 degrees, through which the pipe C D E F is to pass. Now, at right angles to D E draw the semicircle 1 3 5, which divide into equal spaces, as shown by the small figures 1 to 5. Parallel to the lines of the pipe D E or C F and from these small figures draw lines intersecting the line of the roof A B at points 1', 2', 3', 4' and 5'. Take a tracing of these points and place them on the vertical line J K, as shown from 1 to 5, through which at right angles to J K draw lines, as shown. Now, measuring in each instance from the line 1 5 in the pipe, take the various distances to the points 2, 3 and 4 in the semicircle and place them on corresponding numbered lines in the pattern, measuring in each instance from the line J K on either side, thus obtaining the intersections shown by the small dots. A line traced through these points, as shown by L M N O, will be the shape of the opening to be cut in the flashing P R S T.



Pattern for Roof Flashing.

ROOFING OVER OLD ROOFS.

From O. H. R., Chrisman, Ill.—Complying with the request of "G. A. H." in *The Metal Worker* of May 24, I would state that whenever a new steel roof is laid directly on or over an old one of like material there seems to be a strong inducement for the condensation of all heavy atmosphere or dampness of any kind, which will in a very short time cause the roof to become rusted and practically ruined. I lay a new tin or sheet metal roof on common dry felt paper or lay it on the sheathing, which, to a greater or less degree, provides for the moisture under the roof being absorbed. I would not advise laying new roofs on old shingles or the coal tar felts that can be generally had.

WANTS TO HEAT A CONSERVATORY.

From G. J. T., Baltimore, Md.—A customer of mine has a porch on his cottage which he desires to inclose and convert into a conservatory. It is 8 x 14 x 10 feet in size, having an eastern exposure of 8 feet and a southern exposure of 14 feet. The open space under the porch will be inclosed with boards and filled in with sawdust or other nonconducting material. At present the cottage is warmed by a steam heater, and it is desired to heat this addition from the steam heater. The question upon which I desire the readers of *The Metal Worker* to assist me is the amount of radiation needed in a cast iron upright radiator or in a heating coil made of pipes to run along the outside wall of the room. The latter plan, I think, is the better way to accomplish the result. The boiler is only 8 feet away from the conservatory. The house is heated on the one-pipe system, and if I run a pipe to a radiator in the conservatory, would it not be best to put in a return pipe? In other words, to connect this radiator on the two-pipe plan.

ARCHITECTS AND THE ROOFING QUESTION.

From J. L., Peterstown, W. Va.—It seems to me that architects nowadays, with their pretty plans and beautiful pictures of houses, have little or no regard for the roofs of the buildings which they design. The roof of a house is certainly admitted to be, next to the foundation, the most important part of the structure. Now, with the complicated plans of attractive buildings, it seems to me that the rafters of the roof might be fixed so that the bulk of the rain will not run to the front of the house. Water barrels in such a location are unsightly and a cistern entirely out of place. The writer was recently called to do a job of spouting on such a building as described, and in order to make the work satisfactory, he had to put in more unsightly outlets and downfalls in front of the house than he would have done if the roof had been properly constructed.

At midnight on Saturday last the doors of the South Carolina Interstate and West Indian Exposition, Charleston, S. C., were closed. The exposition opened on December 1 last, and the enterprise in many respects was eminently successful. It is stated, however, that it will be a loss financially, and the stockholders will receive a very small proportion of their subscriptions back. The attendance was large, and the effect of the exposition on the city of Charleston is expected to be eminently satisfactory.

The ship "Lena" arrived in the port of New York a few days ago carrying about 7 tons of volcanic dust, which was used as ballast. Three weeks ago the "Lena" was at Barbadoes, preparing to start in ballast. It was at that time that the shower of dust and fine gravel from La Soufriere fell in the vicinity of the islands. The "Lena" being in need of ballast, the captain decided to use what dust fell on her decks for that purpose.

In order to combat the smoke nuisance the Prussian Government called together a committee for the trial of all smoke consuming apparatus, says the *Engineer*. This committee have finished their work, and common measures are about to be taken to remove the evil. It was proposed to institute schools where schools could be specially trained for the handling of steam boiler plants. The Steam Boiler Revision Association consulted most of the branch associations, and the result was that most of them were against the idea of the schools; but it was proposed to send properly qualified men to instruct the stokers employed in the various steam plants.

TRADE REPORT.

MARKET SUMMARY.

Pig Tin is quiet and about ¼c. lower.

Copper is unchanged and dull.

Pig Lead remains quiet and firm.

Spelter is scarce for spot and prices high and firm.

Antimony is unchanged.

Nickel is in good demand and without change in price.

Aluminum is firm and in good demand.

Tin Plates are quiet, with prices unchanged.

Sheets are very firm in price and in good demand.

Old Metals are fairly active and without change in price.

Foundry Iron is very scarce, with prices extremely strong and high.

Sheet Copper is in good demand, with prices firm.

Sheet Zinc is without change.

Hardware business is relaxing somewhat as season progresses; prices rule very firm.

Plumbers' Supplies are in good demand, with prices generally very firm.

Hot Air Registers are in active demand, with prices irregular.

Stove Boards are active and firm in price.

Screen Goods are getting scarce and prices rule very firm.

Wire Nails are moving in good volume at former prices.

Cut Nail prices have been reaffirmed for June; demand is moderate and supply rather short.

White Lead is less active, but firm.

Linseed Oil is fairly firm and without change in price.

Spirits Turpentine is ¾c. higher and quiet.

METAL MARKET.

NEW YORK, June 6, 1902.

Pig Tin.—Weakness in London was the feature of the Pig Tin market in the early part of the week, and prices here dropped in sympathy with those on the other side. The downward movement, however, was checked on Thursday, and a reaction in prices set in in this market, bringing them up again to within about ¼c. of those ruling at the date of our last report. The market closed firm and tending upward. Jobbers quote Straits Pig in small lots at about 31c. to 31¼c. per lb., according to quantity. Throughout the entire week business was quiet and dull. The deliveries for the month of May were very heavy, showing that a large amount of material is being delivered against old contracts. The total statistics for Europe and the United States, as compiled by the New York Metal Exchange, show:

	Tons.
Total visible supply May 31, 1902	17,018
Against visible supply April 30, 1902	15,596
Against visible supply May 31, 1901	16,991

Copper.—No developments of special interest have taken place in the market for Copper during the week. The consumptive demand continued light, purchases being largely confined to moderate sized lots for present requirements. Wholesale prices were somewhat easier at the close. It is said that the offerings of Copper for prompt delivery in this market are by no means heavy. This fact, however, has not operated to infuse any new strength into the market. Jobbers quote Lake Ingot in small lots at 13c. to 13¼c. per lb., and Casting Copper at 12¾c. to 13c.

Sheet Copper.—Manufacturers and manufacturers' agents report a continued brisk demand for Sheet Copper for current consumption. Some good sized contracts are said to have been placed for deliveries up to the end of next month. The consumption of Sheet Copper this season is considerably ahead of that of former years, and the outlook is favorable for a continuance of the present activity. Prices remain firm on the basis of 18c. per lb. for Sheet Copper from store.

Pig Lead.—There is no change in the market for this metal. The demand continues moderate and prices steady and firm at the figures ruling for some time past—viz., 4.45c. to 4½c. per lb. for American Pig in small lots.

Spelter.—The scarcity of spot metal continues in this market, keeping prices for prompt delivery at relatively high figures. Quotations, in fact, are more or less nominal at the present time. Producers are not offering freely nor are consumers showing any disposition to buy to any extent beyond their immediate requirements. The tone of the market at the close was very strong, good Western brands in small lots being quoted at about 5¼c. to 5½c. per lb.

Sheet Zinc.—The demand for Sheet Zinc is of the usual proportions and prices are firmly maintained at 6¼c. per lb. for 600-lb. cask lots and 6¾c. to 7c. for smaller quantities.

Antimony—Is unchanged. Hallett's in small parcels is quoted at 8⅝c. to 8¾c. per lb.; U. S. at 8⅜c. to 8½c., and Cookson's at 10¼c. to 10¾c.

Nickel.—There is no change in the market for this metal. Small lots are quoted at about 55c. per lb.

Aluminum.—The demand continues active and prices are without change. Small lots of No. 1 Ingot guaranteed 99 per cent. pure are quoted at 37c. per lb., and 100-lb. lots at 35c.

Tin Plates.—The market for Tin Plates is without any new feature worthy of note. New business is on a very moderate scale, while deliveries on old contracts continue liberal. The mills are coming up nearer abreast of their orders and fairly prompt shipments are now obtainable. The retail demand for Tin and Terne Plates in this market is rather spasmodic. Buyers continue to call for such quantities as they need for immediate or early future requirements and are not inclined to anticipate their wants. Prices are firm and without change. American Bessemer Coke Plates, IC, 14 x 20, in moderate sized lots, delivered at New York or corresponding points, are quoted at about $4.75 to $4.90 per box.

Sheets.—It is said that the large consumers of Sheets are now pretty well covered for some time ahead. Nevertheless, a fairly large demand for both Black and Galvanized Sheets continues. While deliveries are more liberal, the Eastern jobbers still complain of being unable to obtain the full assortment of Black Sheets that they need to meet the requirements of their customers. Some sizes in the heavier gauges of Black Sheets are quite scarce at the moment. Galvanized Sheets are not in such good demand as Black, but the mills are said to be pretty well filled up on old contracts for this material. Prices hold very firmly in view of the increasing cost of production, and as quite a number of the Sheet mills will close for a time during this and next month for inventory and repairs, reducing the output to a considerable extent, the outlook is regarded as decidedly favorable for continued strength in this market. Jobbers' prices are without change. No. 27 One Pass Cold Rolled Soft Steel Sheets are selling at about 3.75c. to 3.80c., and No. 24 Galvanized at 4c. to 4.20c.

Chicago advices are as follows: There has been but a moderate degree of activity in Sheets. The market has remained firm, with full prices obtained. Small lots of No. 27 Black Sheets from store are quoted at 3.45c. to 3.55c., and Galvanized Sheets at 4.70c. to 4.75c. for No. 27.

Old Metals.—Scrap Iron is fairly active and firm, and Old Metals of other descriptions are in moderate demand. Prices are firm, as a rule, and not quotably changed. Dealers are paying about the following rates for moderate sized lots, delivered at New York or corresponding points:

Heavy Copper	per lb.	10¼c.
Light and Tinned Copper	per lb.	9¼c.
Heavy Brass	per lb.	8¼c.
Light Brass	per lb.	6½c.
Lead	per lb.	3⅝c.
Tea Lead	per lb.	3¼c.
Zinc	per lb.	2⅞c.
Pure Aluminum Sheet	per lb.	22 c.
Cast Aluminum	per lb.	17 c.
No. 1 Pewter	per lb.	18 c.
No. 2 Pewter	per lb.	9 c.
Tin Plate Scrap, per gross ton	.... to	$5.00
Wrought Iron Scrap, per gross ton	$13.00 to	13.50
Heavy Cast Scrap, per gross ton	12.00 to	12.50
Stove Plate Scrap, per gross ton	8.50 to	9.00
Burnt Iron, per gross ton	7.00 to	7.25

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THE PIG IRON MARKET.

New York.—The market continues exceedingly bare of Iron and the quantities available for delivery at any time this year are becoming smaller and smaller. A moderate amount of Scotch Foundry Iron is being purchased right along for importation, but prices for good standard brands are mounting steadily. The high phosphorus of the Scotch Irons is troubling consumers, who are not accustomed to it. Quotations for summer delivery are as follows: Northern Iron, at tidewater, No. 1 X, $21.50 to $22; No. 2 X, $21 to $21.50; No. 2 Plain, $20.65 to $21. Tennessee and Alabama brands are quoted as follows: No. 1 Foundry, $21 to $21.50; No. 2 Foundry, $19.75 to $20.25; No. 3 Foundry, $18.75 to $19.

Chicago.—What new developments there have been in the Pig Iron market during the week have favored higher rather than lower prices. The demand has continued active and urgent, with relatively moderate offerings. Higher prices have been obtained for both late and nearby delivery, and resales for immediate shipment are from $2 to $3 per ton above quoted prices. Northern Iron is especially scarce. As the market reaches a higher level there is relatively less difference in the various grades, and the difficulty in giving reliable prices increases with the diminishing business. We quote as follows:

Lake Superior Charcoal	$23.00 to $24.00
Local Coke Foundry, No. 1	22.50 to 23.00
Local Coke Foundry, No. 2	21.50 to 22.00
Local Coke Foundry, No. 3	21.00 to 21.50
Local Scotch, No. 1	22.00 to 23.00
Ohio Strong Softeners, No. 1	24.00 to 24.50
Southern Silvery, according to Silicon	21.15 to 21.65
Southern Coke, No. 1	21.15 to 21.65
Southern Coke, No. 2	20.65 to 21.15
Southern Coke, No. 3	20.15 to 20.65
Southern Coke, No. 1 Soft	21.15 to 21.65
Southern Coke, No. 2 Soft	20.65 to 21.15

Philadelphia.—There is little to be said in regard to Pig Iron prices, except that they are liable to be almost anything within the next few days. The difficulty in getting supplies to the furnaces and the unsettled condition of labor make it reasonably certain that no improvement can be looked for until after midsummer, and perhaps a long time beyond that. We quote as follows:

No. 1 X Foundry	$20.50 to $21.50
No. 2 X Foundry	19.75 to 20.50
No. 2 Plain	19.50 to 20.00

Pittsburgh.—Pig Iron sales in the last few days have been light, on account of the strike at the blast furnaces in the Mahoning and Shenango valleys. Most of the large consumers of Foundry Iron are covered, but small lots of Northern No. 2 are held at $21 to $22, Pittsburgh.

Cincinnati.—The Pig Iron market at present is quiet, though it can hardly be said to be from the usual summer season causes. Almost all, if not absolutely all, of the Southern furnaces are temporarily withdrawn from the market. Under these conditions the quotation list becomes a matter of approximation, with a range of $16.50 to $17.50 for No. 2 Foundry, Birmingham basis. Buyers, in the main, appear to be taking matters philosophically, and while there is considerable more inquiry than there is Iron in sight to satisfy it, there does not appear to be anything of a panicky feeling regarding the situation. We quote, f.o.b. Cincinnati, as follows:

Southern Coke, No. 1	$19.75 to $20.75
Southern Coke, No. 2	19.25 to 20.25
Southern Coke, No. 3	18.75 to 19.75
Southern Coke, No. 4	18.25 to 19.25
Southern Coke, No. 1 Soft	19.75 to 20.75
Southern Coke, No. 2 Soft	19.25 to 20.25
Ohio Silvery, No. 1	21.85 to 22.35
Ohio Silvery, No. 2	21.35 to 21.85
Lake Superior Coke, No. 1	22.35 to 23.10
Lake Superior Coke, No. 2	21.85 to 22.35
Lake Superior Coke, No. 3	21.35 to 21.85

CHICAGO REPORT.

Scrap Iron and Steel.—A firm tone has prevailed for Scrap of all kinds, under a good demand and only moderate receipts. Stove Plate, however, has been more freely offered and is easier. We quote dealers' prices for carload lots, Chicago delivery, as follows:

	Per net ton.
Country Wrought Scrap	$14.00 to $14.50
Machinery Cast	.... to 13.00
Malleable Cast	12.00 to 12.50
Stove Plate (free from burnt)	10.00 to ....
Burnt Iron and Grate Bars	8.00 to 9.00
Sheet Iron and Hoops	8.00 to 9.00
Plow Steel	12.00 to 13.00
Breaking Stock	.... to 11.00
Old Boilers—whole (Iron)	9.50 to 10.00
Old Boilers (Iron) cut in single Sheets and Rings	12.00 to 12.50
Old Gas Pipes and Boiler Tubes	12.00 to 12.50
Cast Borings	8.50 to 9.00
Turnings	12.00 to 12.50
Horseshoes	14.00 to 14.50

Old Metals.—A little firmer tone has been developed in Old Copper, in sympathy with new material, but prices have not changed essentially. Brass, Lead and Zinc have also ruled stronger at previous prices. Following are the prices paid by dealers in this market:

	Per lb.
Copper Wire and Heavy	11 c.
Copper Bottoms	10 c.
Copper Clips	11 c.
Red Brass	11¼c.
Yellow Brass	8½c.
Red Brass Borings	10 c.
Yellow Brass Borings	7½c.
Light Brass	7½c.
Pipe Lead	3.70c.
Tea Lead	3.35c.
Zinc	3 c.
Tin Foil	22 c.
Pewter, No. 1	19 c.
Pewter, No. 2	11 c.
Aluminum	20 c.

Old Rubber.—There have been freer offerings of Rubber Shoes, which are lower, but other kinds of Rubber are well sustained. The following prices are paid by dealers in this market:

	Per net ton.	Per lb.
Garden Hose	$25.00	.....
Air Brake Hose	42.00	.....
Rubber Shoes	....	7⅛ to 7¼c.
Rubber Car Springs	....	5 c.
Inside Bicycle Tubing	....	22 c.
Outside Tubing	....	6 c.
Black Rubber	....	4 c.
White Rubber	....	8½c.

Rags—Are freely offered and with only a moderate demand the market is slow and easy. Dealers are buying at 70c. to 75c. per 100 lbs., Chicago delivery.

Anthracite Coal.—There is a fair movement on old contracts, but little new business in this section. For the time being the supply is ample, but all depends upon the strike situation in the East. The following are the prices current, subject to a discount of 30c. per ton for shipments in June:

	Grate.	Egg and Stove.
Chicago	$5.75	$6.00
Milwaukee, Wis.	5.75	6.00
St. Louis	6.20	6.45
Kansas City, Mo	8.25	8.50

◆

The Aluminum Foundry Company, Manitowoc, Wis., are doing a special foundry business in Aluminum Castings. They advise us that through many years of experience they have become thoroughly acquainted with the alloying of Aluminum, so as to give the metal any desired strength. The company manufacture Castings for automobiles, motor cycles, &c., and do experimental work of all kinds that can be made of pure Aluminum or its alloys. They also manufacture several novelties in Aluminum. The members of the company are Conrad Werra and Henry Stahl.

The Jeffrey Mfg. Company, Columbus, Ohio, are sending out a new catalogue of the Jeffrey Screens for screening all kinds of materials, including ash, coal, rock, coke, plaster, slate, ores, clinker, sand, &c. The catalogue is of 48 pages, profusely illustrated and excellently gotten up. It contains a list of important companies who are using the Jeffrey Screens, together with a number of testimonials from those who have tested them in operation.

THE HARDWARE TRADE.

With the entrance of the summer and the coming of warm weather there is a relaxing in the pressure of business as between the manufacturers and larger merchants. This condition is accepted as entirely normal and does not indicate any lessening of prosperity or any weakening in the tone of the market. Few manufacturers are in a position in which they are anxious at the present time to secure orders for future delivery. Many of them will be fully occupied for some time in clearing up their order books and accumulating even a fair stock with which to carry on next season's trade. Various influences are tending to keep prices steady and to give them, in a good many lines, something of an upward drift. The high price of material and its scarcity is an important influence in this direction. Wages are also in nearly all factories higher, gradual and individual advances taking place from time to time, while in some cases there have been specific increases in the remuneration of the workmen. The ease with which goods are sold also gives manufacturers confidence in maintaining prices, and they are thus enabled to realize better profits than has often been the case. There is an excellent business doing between the retail merchants and the jobbers or manufacturers from whom they draw their supplies, and their orders are frequent and for well assorted lots. Season goods are naturally in especial request. The wisdom of those who covered their requirements early in the year is finding illustration in many lines in which there is a good deal of trouble in obtaining goods at this late date. The number of those, however, who deferred buying is said to be comparatively large. A feature of the trade which deserves notice is the steady and large demand for Builders' Hardware, a line in which manufacturers find it difficult to execute orders promptly. The gradual broadening of the field covered by Hardware is receiving the practical attention of many alert and enterprising merchants who are considering the feasibility of adding to their assortment goods which are found to go harmoniously and advantageously with a Hardware stock. In spite of the large domestic demand export business continues in excellent volume. The losses in certain directions are, it is thought, fully made up by gains in others. The financial condition of the trade throughout the country is very satisfactory. Few failures are reported, and there is little serious complaint in regard to collections.

NOTES ON PRICES.

Cast Iron Pipe and Fittings.—The scarcity of some of the sizes of Cast Iron Pipe is beginning to cause considerable annoyance to the trade. The demand for 4-inch Iron Pipe, standard weight, has become so great during the past month that the leading concern in the line report that they are over a quarter of a million feet behind with their orders. They are running the plants to the full limit of their capacity, and yet they cannot keep up with the demand for the goods. The newer concerns in the business are reaping the benefit of the situation, which is giving the trade an opportunity to test the quality of the material produced by the independent makers, and consequently opening up for them new channels of consumption for their output. There is no change in price in view. The next meeting of the manufacturers will be held in July, and until that time present quotations are likely to rule.

Hot Air Registers.—The market for Hot Air Registers is in a somewhat unsettled condition. Some of the manufacturers are said to be quoting prices which, it is claimed, are unjustified by the condition of the market, and the general level of quotations is lower than it was a few months ago. It has been found impossible to maintain concerted action among the manufacturers of these goods, and many of them complain that at present prices the margin of profit on some classes of Registers is reduced to almost nothing. The volume of business is referred to as exceptionally good, which makes the weak condition of the market appear anomalous. Prices in the East rule about 5 per cent. higher than those in the Western part of the country. In view of the present condition of the Iron market and the growing scarcity of raw material, however, it is expected that the market for Registers will stiffen in the near future.

Expansion Bolts.—In regard to the combination of the manufacturers of Expansion Bolts, reference to which was made in these columns a few weeks ago, we are informed that options on various plants have been taken during the past few weeks in the interest of a Baltimore, Md., syndicate. M. Harper Steward of Philadelphia, who was instrumental in obtaining the various options, states that the idea of the syndicate is to form a company of as low capitalization as possible, and to base the same on the amount of Bolts sold during the past two years and the value received from the same. With the consolidation of six or more companies, it is calculated that the cost of manufacture would be decreased, and that with a decrease of about 10 per cent. in the discounts, enough profit would be secured to declare a fair dividend. Among those who have given options on their plants are Isaac Church, Toledo, Ohio; McCabe Hanger Mfg. Company, New York; D. C. Seaman & Co., and the Steward & Romaine Mfg. Company of Philadelphia, and the Phipps Mfg. Company of New York. It is expected that options will be closed at an early date, when the formation of the new company will be proceeded with.

Stove Boards.—Reports from the manufacturers of Stove Boards indicate an especially active demand for those goods. Prices are firmly maintained.

Screen Goods.—The demand for Screen Doors, Window Screens, &c., is referred to as about the heaviest ever known at this season. The manufacturers are rushed with orders and are all behind in their deliveries, some sizes being very scarce. Prices, under the circumstances, are naturally strong, and in many cases consumers are obliged to pay a sharp premium over quoted rates in order to secure early delivery of these goods.

Freezers.—A similar condition of affairs obtains in the market for Ice Cream Freezers, the demand for which considerably outstrips the supply. This is particularly the case with the more popular makes. Notwithstanding that the majority of orders for Freezers were placed unusually early this year, the demand upon the manufacturers shows no signs of abating. Prices are firm.

Wire Nails.—While a falling off in the demand for Wire Nails is noted, which, however, is not unusual at this season of the year, the retail business in these goods in New York is referred to as extremely satisfactory. Prices are without change, small lots of Wire Nails from store being quoted at $2.30 per keg.

Cut Nails.—At the monthly meeting of the Cut Nail Association May prices were reaffirmed for the month of June for domestic business and export prices were advanced 10 cents per keg. Complaint is still heard regarding the scarcity of Cut Nails, owing to the inability of the mills to procure enough Steel. The demand for Cut Nails in the New York market is moderate. Small lots from store are quoted at $2.30 per keg.

White Lead.—New orders for White Lead in Oil placed during the past week were not so heavy as of late, but deliveries on contracts are fairly active. There are indications that the usual summer quiet in this line is beginning. Prices are unchanged, small lots of White Lead in Oil being quoted at 6¼ to 6½ cents per pound.

Linseed Oil.—The local demand for Linseed Oil is confined to comparatively small lots. The market is fairly firm. It is reported to be easier to buy small lots than larger quantities at the latest quotations. Prices are unchanged, City Raw being quoted in a retail way at 67 to 67½ cents per gallon.

Spirits Turpentine.—The condition of the Southern Turpentine market continues strong, owing to comparatively light receipts. The local demand is moderate, buyers not being inclined to purchase beyond immediate requirements at present prices. Turpentine in small lots is quoted at 49 to 49¼ cents per gallon, being about ¾ cent above last week's prices.

Old Rubber.—The demand for Old Rubber is of moderate proportions. Dealers in New York and vicinity are paying about the following figures:

Car Springs, ton lots, per lb	5 c.
Rubber Shoes, less than carloads, per lb	7 to 7⅛c.
White Wringer Rolls, per lb	7⅛ to 7¼c.
Inside Bicycle Tubing, per lb	21½c.
Outside Tubing, per lb	6 c.

Agate Ware, &c.—Lalance & Grosjean Mfg. Company, New York City, issue on June 2 the following discounts from their revised price-list of Enameled Wares, dated November 1, 1901:

	Discount.
Agate Nickel-Steel Ware	50 and 20 %
Pearl Agate Ware	50 and 20 %
Blue and White Ware	60 and 15 %
All White Ware, Blue Border	50 and 20 %
Regal Steel Ware	60 and 10 %
Peerless Ware	70 and 10 %

TRADE NOTES.

The American Brass Mfg. Company, St. Louis, Mo., have increased their capital stock from $10,000 to $20,000.

An elaborate card is being sent through the mails by the Grasselli Chemical Company, Cleveland, Ohio, calling attention to the merits of their Eureka Soldering Flux.

The Pressed Steel Tank Company, Milwaukee, Wis., have been incorporated, with a capital of $100,000, to take over the business of the Seamless Tank Company of that city. Robert H. Hackney, F. G. Bigelow and G. Z. Markham are the incorporators.

The Houghton & Buxton Mfg. Company, Worcester, Mass., makers of Stamped Metal Goods, have taken the factory space formerly occupied by the W. H. Eddy Company, adjacent to the company's shops on Exchange street. The additional space will add 50 per cent. to the Houghton & Buxton Company's facilities, which was badly needed, the business having grown with great rapidity during the past year.

The Johns-Pratt Company, Hartford, Conn., manufacturers of Asbestos, suffered a $50,000 loss by fire at their plant June 3.

The Whiting Foundry Equipment Company, Harvey, Ill., state that the volume of business continues most satisfactory. They are spending $30,000 in tools and for additional room.

In a recent lecture in Philadelphia, Sir Robert Ball, the noted astronomer, is reported to have utterly discredited any idea of "talking with Mars." Sir Robert estimated that to signal Mars so as to be seen by a Martian astronomer who happened to be looking this way, using the wigwag system, we should need a flag 300 miles long and 200 miles wide, waved from a staff 500 miles long. Flashlight signaling he considers equally impracticable. If Lake Superior could be filled with petroleum and set on fire, the resulting blaze might be discerned as a speck of light, but not sufficiently prominent to suggest that anything unusual was in progress. He does not appear to consider electrical means worthy of discussion.

A correspondent of the *Foundry*, giving his experience with gas as a fuel for brass furnaces, says he has found that gas in any form is not the best fuel for melting brass in crucibles, as it destroys these to such an extent as to more than overbalance any gain which might be made with a cheap supply of this fuel. In his opinion nothing equals coke for real economy in the melting of brass.

The American Spiral Pipe Works, Chicago, have issued their 1902 catalogue, containing general and special information about Spiral Riveted Pipe, Connections and Fittings of special import to a large number of consumers. Spiral Pipe is recommended by the manufacturers for the following: Water mains, irrigation, hydraulic mining, water conduits, leader pipe, exhaust steam, smoke stacks, packing houses, blower pipe, suction pipe, discharge pipe, cold storage plants, sugar plantations, sugar refineries, hot air heating, air compressors, mine ventilation, building ventilation, tunnel ventilation, paper and pulp mills, railway water stations, &c.

McCarthy Brothers are building a new store and apartment house at 511 South West street, Syracuse, N. Y., and will occupy the store on the first floor as a plumbing and hardware establishment.

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ROOFING SUPPLIES, METALS, TIN PLATES, &c.

REVISED JUNE 6, 1902

Aluminum—

No. 1 Aluminum (guaranteed over 99% Pure), in ingots for remelting.

Small lots	₩ ℔, 37¢
100-℔ lots	₩ ℔, 35¢

Aluminum Sheet, B. & S. gauge.
In lots of 50 ℔s or more.

Wider than	6-in.	14-in.	24-in.
And including	14-in	24-in.	30-in.
	₩ ℔	₩ ℔.	₩ ℔.
Nos. 18 to 19	$0.42	$0.44	$0.47
" 20	.44	.46	.49
" 21 to 23	.46	.48	.51
" 24	.46	.50	.53
" 25	.47	.51	.54
" 26	.47	.54	.59
" 27	.48	.57	.62
28	.48	.57	.64
29	.49	.60	.69
" 30	.50	.64	.77

Note.—Lots of less than 50 ℔s 5¢ ₩ ℔ extra.

Antimony—

Cookson	₩ ℔. 10¼@10¾¢
Hallett's	₩ ℔. 8⅜@8¾¢
U.S	₩ ℔ 8⅜@8½¢

Brass, Roll and Sheet...... 30%

Conductors—

Corrugated.

Round or Square.—

Galvanized ½ or more. N'st'd	70&10%
" Not Nested	70&5%
" Plain Round, ½ or more, Nested	70&10%
Galvanized, Plain Round, Not Nested.	70&5%

Spiral Lock Seam Pipe—

Galvanized	60@60&10%

Spiral Riveted.

Galvanized	40%

See also *Elbows and Shoes; Eave Trough Miters; Strainers, Conductor.*

Conductor Strainers—

See *Strainers, Conductor*

Copper—

Lake Ingot	13 @13½¢
Casting	12¾@13 ¢
Sheet and Bolt	18¢ ₩ ℔ basis
Cold Rolled Sheets	19¢ ₩ ℔ basis
Cold Rolled and Polished Sheets	20¢ basis
Planished Sheets	21¢ basis
Bottoms, Pits and Flats	₩ ℔ 22¢ basis

Eave Trough Galvanized

Territory	L. C. L.
Eastern	75&10%
Central	75&7½%
Southern	70&12½%
S. Western	70&10%

Terms, 2% for cash.

Eave Trough Mitres—

Lap or Slip Joint	list, 25%

Elbows—Plain Adjustable—

Eastern List.

Tin	30%
Galvanized	30%
Perfect Elbows	40%

Stove Pipe—

Four-Piece

	4	4½	5	5½	6-inch.	
No. 1.	$0.80	.85	.90	1.00	1.05	per doz.
No. 2.	.65	.70	.75	.80	.85	"
No. 3.	.60	.63	.65	.70	.80	"

Elbows and Shoes—

Galvanized	60%

Gasoline—

See *Petroleum Products.*

Iron Sheet—*Black.*

	One Pass, C. R. Soft Steel.	R. G. Cleaned.
Nos. 14 to 16	₩ ℔. 3.40	3.45¢
Nos. 18 to 21	₩ ℔. 3.50	3.55¢
Nos. 22 to 24	₩ ℔. 3.60	3.65¢
Nos. 25 and 26	₩ ℔ 3.70	3.75¢
No. 27	₩ ℔. 3.80	3.85¢
No. 28	₩ ℔. 3.90	3.95¢

Russia, Planished, &c.

Genuine Russia, according to assortment	₩ ℔ 11@14 ¢
Do. Stained	6@10½¢
Patent Planished. ₩ ℔ A, 11¢; B, 10¢ net	

Galvanized.

Nos. 14 and 16.	₩ ℔ 3.45@3.60¢
Nos. 18 and 20.	₩ ℔, 3.70@3.90¢
Nos. 22 and 24.	₩ ℔, 4.00@4.20¢
No. 26	₩ ℔, 4.25@4.50¢
No. 27	₩ ℔, 4.55@4.80¢
No. 28	₩ ℔, 4.85@5.10¢
No. 30	₩ ℔, 6.00@6.30¢

No. 20 and lighter, 36 inches wide, 25¢ higher.

Lead—

American Pig		4.45@4½¢
Bar		5@5½¢
Pipe	6½¢	20% off
Tin Lined Pipe	12½¢	20% off
Block Tin Pipe	42½¢	20% off
Sheet Lead	7¼¢	20% off

Old Lead in exchange, 3¾¢ ₩ ℔.

Mitres Eave Trough—

See *Eave Trough Mitres*

Nickel—

Per ℔	55@60¢

Paints Oils &c.—

Leads—

Lead, American White, in Oil;	
Lots of 500 ℔ or over	6¼ @ 6½
Lots less than 500 ℔	6½ @ 6¾
Lead, White, in oil, 25 ℔ tin pails, add to keg price	@ ½
Lead, White, in oil, 12½ ℔ tin pails, add to keg price	@ 1
Lead, White, in oil, 1 to 5 ℔ assorted tins, add to keg price	@ 1½
Lead, White, Dry in bbls	5¾ @ 6
Lead, Red, bbls., ½ bbls. and kegs:	
Lots 500 ℔ or over	@ 6
Lots less than 500 ℔	@ 6½

Oils—

Linseed, City, raw	₩ gal. 67@67½¢
Linseed, City, boiled	69@69½¢
Linseed State and West'n, raw	66@66½¢

Spirits Turpentine—

In Southern bbls	49 @49¼¢
In machine bbls	49½@50 ¢

Putty—

In bulk	$1.25
In bladders	2.25
In cans 12 ℔ to 25 ℔	2.25
In cans 1 ℔ to 5 ℔	3.25

Petroleum Products—

In Barrels (Barrel included)

Stove Gasoline	₩ gal. 10½@11¢
Kerosene	₩ gal. 12@13¢

Pipe Drain............40%

Pipe, Spiral—

See *Conductors.*

Registers—

List Sept. 2, 1901.

Black Japanned	70%
White Japanned	70%
Nickel Plated	70%
Bronze Finishes in Imitation of Gold, Silver, Copper or Bronze	70%
Electroplated in Brass, Bronze or Copper	70%
White Porcelain	60%
Solid Brass and Bronze Metal	50%

Roofing Material—

1 Ply Tarred Paper. ₩ ton.	$31.00@32.00
2 Ply Tarred Paper... ₩ roll, 108 sq. ft.	55@60¢
3 Ply Tarred Paper.. ₩ roll, 108 sq. ft.	80@85¢
Slater's Felt	₩ ton, $35.00@36.00
Roofing Pitch	₩ bbl. $2.50

Rosin—

Common and Good—Strained.

Rosin, C. & D.	₩ bbl.	$1.62½@$1.65
Rosin, E. & F.	₩ bbl.	1.70 @ 1.75
Rosin, G. & H	₩ bbl.	1.80 @ 1.85
Rosin, I. & K	₩ bbl.	2.10 @ 2.70
Rosin, M. & N.	₩ bbl.	3.05 @ 3.55

Shoes and Elbows—

See *Elbows and Shoes.*

Slate Roofing—

f. o. b. cars, Quarry Station.

	According to size.
Pennsylvania:	
Best Bangor, ₩ sqr	$3.25@$5.00
No. 1 Bangor Ribbon. ₩ sq	3.25@ 3.50
Pen Argyle, ₩ sqr	3.25@ 4.00
Peach Bottom, ₩ sqr	5.25@ 6.10
No. 1 Chapman, ₩ sqr	3.50@ 4.35
No. 1 Penna. Black	$2.75@3.80
Unfading Washington Bangor	$3.25@4.25
Vermont:	
Sea Green, ₩ sqr	$2.00@$3.40
Purple, ₩ sqr	4.25@ 4.75
Unfading Green, ₩ sqr	3.50@ 4.50
Red, ₩ sqr	6 50@10.50
Maine:	
Brownville, Unfading Black. No. 1	$5.00@7.20

Solder—

½&½ guaranteed	20 @20½¢
No. 1	17½@19 ¢

Prices of Solder indicated by private brands vary according to composition.

Soldering Fluids—

	Per Pound. Barrels	Per Pound. Smaller Q'ntities
Concentrated Flux	4c	5c
Eureka Flux:		
Triple Strength	8c	3½c
Extra Concentrated	4½c	5c
Crystal		7c
Gedney's Fluid	2c	2c
Lennox Fluid	2c	3c
Perfection Flux	3c	3½@1c
Yager's Salts, 1 lb. bottles		each, 50¢
5 lb. bottles, per lb., 45¢		

Soldering Coppers—

Per ℔	20@22¢

Spelter—

Western Spelter	5¼@5½¢

Spiral Pipe—

See *Conductors.*

Stove Pipe Elbows—

See *Elbows, Stove Pipe.*

Stove Trucks—

See *Trucks, Stove.*

Strainers Conductor—

Galvanized	50%

Tin Pigs and Bars—

Banca, pigs, ₩ ℔	31 @32 ¢
Straits, pigs, ₩ ℔	31 @32 ¢
Straits, in bars, ₩ ℔	32 @33 ¢

Tin Plates, American

Charcoal Plates, Bright—

N. B.—The price of 20 x 28 sizes double the price of 14 x 20.

Calland Grade:		
IC,	14 x 20	$7.00
IX,	14 x 20	8.50
IXX,	14 x 20	9.75
IXXX,	14 x 20	11.00
IXXXX.	14 x 20	12.25
Melyn Grade:		
IC,	14 x 20	6.50
IX,	14 x 20	8.00
IXX,	14 x 20	9.25
IXXX,	14 x 20	10.50
IXXXX	14 x 20	11.75
Allaway Grade:		
IC,	14 x 20	6.00
IX,	14 x 20	7.10
IXX,	14 x 20	8.20
IXXX,	14 x 20	9.30
IXXXX.	14 x 20	10.40

Coke Plates, Bright—

Bessemer Steel, or equal to J. B. Grade, full weight	IC, 14 x 20	$4.90@5.00
" "	IX, 14 x 20	$6.00

N. B.—The reduction per box on lighter Plates than IC, 14 x 20, is as follows:

100 ℔	15¢
95 ℔	20¢
90 ℔	25¢
85 ℔	30¢

Terne Plates—

N. B.—The following prices are for IC 20 x 28, the rate for 14 x 20 being half as much. IX is usually held at $2 per box advance for 8 to 10 ℔ coating and $2.50 to $3 advance for 15 ℔ and upward.

About 40 ℔ coating	$16.00@16.50
About 30 ℔ coating	15.25@15.75
About 20 ℔ coating	13.25@13.75
About 15 ℔ coating	11.25@11.75
About 8 ℔ coating	@10.00

Boiler Plates, American—

IXX, 14 x 26..(112 sheets)	$12.50
IXX, 14 x 28..(112 sheets)	13.50
IXX, 14 x 31..(112 sheets)	15.00

Troughs Eave—

See *Eave Trough.*

Trucks, Stove—

Improved Lock Frame, per doz	$15.00
Steel Lock Frame, per doz	13.00
Daisy Improved pattern, ₩ doz	18.00

Tubes and Tubing—

Brazed Brass, List June 6, 1898	40%
Copper and Bronze, 3c per lb. list more than Brass.	
Seamless Brass Tubes, net list Feb. 4 1899	
Tin	50%
Galvanized	50%
Fittings for do	40%

Zinc—

600 ℔ casks ₩ ℔	6½¢
Per ℔	6¾@7¢

PLUMBERS' AND STEAM FITTERS' SUPPLIES.

Boilers, Galvanized—

Standard Boilers:	
30 gal	72½%
35 and 40 gal	70%
Other sizes up to 52 gal	65%
52 gal. and above	55&5%
Extra Heavy Boilers:	
18 to 52 gal	60%
53 gal. and above	50&5%

Brass Work, Plumbers'—

List of December 7, 1896.

Compression:	
Basin Cocks	65%
Bath Cocks and Double Bath Cocks	65%
Bibs	65%
Bibs, Flanged	65%
Fuller:	
Bibs	70%
Basin Cocks, Nos. 1 to 4	70%
Bath Cocks, No. 4½	$2.40 each net
Ground Key Work:	
Finished Bibs	55&5%
Rough Bibs	60%
Rough Stop and Stop and Waste Cocks	70@70&5%
Rough Stop and Stop and Waste Cocks, Patented	65@65&5%

Miscellaneous—

Basin Clamps		60@65%
Basin Plugs		60@65%
Chain Stays		60&5@70%
Iron Boiler Couplings:	Lead Pipe.	Iron Pipe.
Plain Face.. ₩ set	$0.95	$1.05
Ground Face ₩ set	$1.00	$1.10
Sink or Bath and Wash Tray Plugs		60@65%
Soldering Nipples		70&5@75%
Soldering Unions		70&5@75%
Union Elbows, Hot Water Heating		75@75&15%

Cocks, Valves &c.—

Cocks—

Brass—

Air and Radiator Air	75@75&5%
Gas Meter and Union Meter	65@70%
Steam	65@70%

Iron—

All Iron	70@70&10%
Iron with Brass Plugs	65@70%

Valves—

Brass—

Check	65@70%
Garden Hose	65&10@70%
Gate	65@65&10%
Globe and Angle, hose outlet	65@65&10%
Globe, Angle and Cross	65&10@70&5%
Horizontal, Vertical and Angle Check	65@65&10%
Hot Water Radiator	75%
Radiator	70&10%
Safety	65%
Safety, Low Pressure	65%
Jenkins' Disc:	
Check	65%
Gate	65%
Globe, Angle and Cross	70%
Radiator	80%
Radiator, Corner	75%
Safety	65%

Iron—

Iron Body	70@70&5%
Foot	65@70%
Jenkins Bros.':	
All Iron, except Gate	40&5%
All Iron Gate	35@40%
Iron Body, except Gate	60%
Iron Body Gate	50@50&5%
Swing Check	50%

Earthenware—

Brown Glazed Wash Tubs	20%
Brown Glazed Sinks, Kitchen and Pantry	20%
Basins, Urinals and Hoppers	45%
Closet Bowls, Sundries, Washouts and Pedestals	50%

Fittings—

Brass Fittings—

Finished	70@75%
Rough	70@75%
Bushings	70@75%
Nipples	70@70&2½%
Unions, Rough and Finished	70@70&5%

Iron—

Cast Iron Fittings, Black and Galvanized, Standard sizes	65@70%
Cast Iron Bushings and Plugs	65@70%
Cast Iron Flanges	65@70%
Cast Iron Floor Flanges	65@70%
Malleable Iron Fittings (from ℔ list)	50%
" " Bushings	65@70%
" " Unions	65@70%
" " Unions, Flange	60&10@70%
" " Pipe Hangers, Universal	50%
Wrought Iron Nipples	65@70%
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" " Long Screws	60@65%

Lavatories—

Porcelain Enameled Iron	30@30&10%

Oakum—

Plumbers' Oakum, 50 lb. bales, ₩ ℔	3½¢

Pipe—

Brass, Iron Pipe Size—

⅛	¼	½	¾ to 3 Inch
$0.33	.34	.29	.23 ₩ ℔

Cast Iron Soil—

List Feb. 25, 1901.
2 to 6 inch inclusive.

Standard	50&5%
Extra Heavy	60&7½%
All Fittings	65&10%

¼ to 15 inch.

Pipe and Fittings, Standard and Extra Heavy	60%

Wrought Iron—

List Feb. 15, 1900.

	Black.	Galv
⅛ to ⅜ inch	58%	46%
½ to 12 inch	65%	58%
Extra Heavy, Plain Ends	50%	40%
Double Extra Heavy	20%	20%

Radiators—

Standard List.

Steam	50&2½%
Hot Water	50%

Sinks, Etc.— Cast Iron—

	Black.	Galv.
Sinks, Square, Half Round and Corner	60@65%	60@65%
Sink Legs.	60%	60@65%
Sink Backs	60%	60@65%
Boiler Stands, Cast Iron	50@10@60%	
Cesspools, Cast Iron	50%	

Wrought Steel Sinks—

New Era, Galv'd and Enameled	70&5%
New Era, Painted	50&10%
L. & G.	50%

Traps—

Drawn Lead Traps, List June 3, 1901	50&5%

Tubs, Bath—

List April 1, 1902.

Cast Iron Enameled Bath Tubs,	
Regular Patterns, Guaranteed	30%
All Special Patterns	15%
Solid Copper, list of Feb. 1, 1899	40%
Solid Porcelain—Class A, 30%; B, 40%; C, 50%.	
Steel Clad Copper Lined, list of Feb. 1, 1899	50@55%

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Asphalt Ready Roofing Co., 136 Water St., N. Y.
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Chattanooga Steel Roofing Co., Chattanooga, Tenn.
Dixon, Jos. Crucible Co., Jersey City, N. J.
Perkins, J. L. & Co., Chicago, Ill.
Rutland Fire Clay Co., Rutland, Vt.

Roofing Cork.
Stowell Mfg. Co., Jersey City, N. J.

Roofing Edgers.
Danzer Metal Works, Hagerstown, Md.

Roofing and Siding, Iron and Steel, Corrugated and Plain.
Berger Mfg. Co., Canton, O.
Burton, W. J. & Co., Detroit, Mich.
Canton Steel Roofing Co., Canton, O.
Chattanooga Steel Roofing Co., Chattanooga, Tenn.
Eller, J. H. & Co., Canton, O.
Globe Iron Roofing & Corrugating Co., Cincinnati, O.
Gummey, McFarland & Co., Phila., Pa.
New York Iron Roofing & Cor. Co., Jersey City, N. J.

Roofing Nails.
Salem Nail Co., 279 Pearl St., N. Y.

Roofing Slate.
Auld & Conger Co., Cleveland, O.
Bray, J. & Co., E. Bangor, Pa.
Galt, John & Sons, 253 Broadway, N. Y.
Genuine Bangor Slate Co., Easton, Pa.
Johnson, E. J. & Co., 38 Park Row, N. Y.
O'Halloran & Jacobs, Pittsburgh, Pa.

Sap Spouts.
Millar, C. & Son Co., Utica, N. Y.

Screens.
Harrington & King Perforating Co., Chicago, Ill.

Screws.
Hubbell, Harvey, Bridgeport, Ct.

Sewer Pipe.
Rutland Fire Clay Co., Rutland, Vt.

Shaped Iron and Steel, Galvanized.
Am. Galvanizing Wks., Chicago, Ill.

Shears, Sheet Metal
Buffalo Forge Co., Buffalo, N. Y.
McSherry, Chas., Pittsburgh, Pa.
Peck, Stow & Wilcox Co., 27 Murray St., N. Y.

Sheet Metal Machinery.
Bertsch & Co., Cambridge City, Ind.
Bliss, E. W. Co., Brooklyn, N. Y.
Clough, R. M., Tolland, Conn.
Double Truss Cornice Brake Co., Buffalo, N. Y.
Gordon, W. J., Phila., Pa.
Heartley Machine Variety Iron & Tool Works, Toledo, O.
Keene, Geo. C. & Co., Cincinnati, O.

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Miner & Peck Mfg. Co., New Haven, Conn.
Niagara Machine & Tool Wks., Buffalo, N. Y.
Ohl, Geo. A. & Co., Newark, N. J.
Peck, Stow & Wilcox Co., 27 Murray St., New York.
Phila. Machine Tool Co., Phila., Pa.
Pocock, O., Cincinnati, O.
Poorman Mfg. Co., Piqua, O.
Robinson, J. M. Mfg. Co., Cincinnati, Ohio.
Stiles & Parker Press Co., Brooklyn, N. Y.

Sheets. Aluminum Coated Steel.

Steel & Iron Aluminum Coating Co., Connellsville, Pa.

Sheets, Galvanized.

American Sheet Steel Co., New York.
Bruce & Cook, 186 to 190 Water St., N. Y.
McClure & Co., Pittsburgh, Pa.
Osborn, J. M. & L. A., Cleveland, O.
Wood Alan Co., Philadelphia, Pa.

Sheets. Iron and Steel.

American Sheet Steel Co., New York.
Bruce & Cook, 186 to 190 Water St., N. Y.
Coe, Jas. A. & Co., Newark, N. J.
Follansbee Bros. Co., Pittsburgh, Pa.
Gummey, McFarland & Co., Phila., Pa.
Osborn, J. M. & L. A., Cleveland, O.
Wood Co., Alan, Philadelphia, Pa.

Shingles and Tiles. Metallic.

Chattanooga Steel Roofing Co., Chattanooga, Tenn.
Cincinnati Stamping Co., Cincinnati, O.
Cortright Metal Roofing Co., Philadelphia, Pa.
Merchant & Co., Philadelphia, Pa.
Meurer Bros. Co., Brooklyn, N. Y.
Montross Metal Shingle Co., Camden, N. J.

Shot.

Colwell Lead Co., 63 Centre St., N. Y.

Siding. (*See Roofing and Siding.*)

Skylights.

Canton Steel Roofing Co., Canton, O.
Chattanooga Steel Roofing Co., Chattanooga, Tenn.
Drouve, G. Co., Bridgeport, Conn.
Mullins, W. H., Salem, O.

Slaters' Tools.

Galt, Jno. & Sons, 253 Broadway, N. Y.
Salem Nail Co., 279 Pearl St., N. Y.

Snow Guards.

Clason Arch. Metal Works, Providence, R. I.

Solder.

Bruce & Cook, 186 to 190 Water St., N Y
Follansbee Bros. Co., Pittsburgh, Pa.
Gummey, McFarland & Co., Phila., Pa.
McClure & Co., Pittsburgh, Pa.
Meurer Bros. Co., Brooklyn, N. Y.
Taylor, N. & G. Co., Philadelphia, Pa.

Speaking Tubes and Whistles.

Ostrander, W. R. & Co., 22 Dey Street N. Y.

Specialties. Sheet Metal.

Vogel, Wm. & Bros., Brooklyn, N. Y.

Statuary, Sheet Copper and Bronze.

Mullins, W. H., Salem, O.

Steam and Gas Fitters' Supplies.

Curtis & Curtis Co., Bridgeport, Conn.
Walworth Mfg. Co., Boston, Mass.

Steam and Water Engineering and Regulating Specialties.

Kieley & Mueller, 7-11 West 13th St., N. Y.

Steel Stamps and Stencil Dies.

Schwerdtle Stamp Co., Bridgeport, Ct.

Stove Cement.

Dixon, Jos. Crucible Co., Jersey City, N. J.
Rutland Fire Clay Co., Rutland, Vt.

Stove Linings.

Bridgeport Crucible Co., Bridgeport, Conn.
Hessler, H. E. Co., Syracuse, N. Y.
McLeod & Henry Co., Troy, N. Y.
Marcy Stove Repair Co., 74 Beekman St., N. Y.
Presbrey Stove Lining Co., Taunton, Mass.
Rutland Fire Clay Co., Rutland, Vt.
Valentine, M. D. & Bro. Co., Woodbridge, N. J.
Williams Stove Lining Co., Taunton, Mass.

Stove and Metal Polish.

Hoffman, Geo. W., Indianapolis, Ind.
Nickel Plate Stove Polish Co., Chicago, Ill.
Rutland Fire Clay Co., Rutland, Vt.

Stove Patterns.

Cope, G. W., Detroit, Mich.
Gobeille Pattern Co., Cleveland, O.
Milwaukee Pattern Works, Milwaukee, Wis.
Vedder Pattern Works, Troy, N. Y.

Stove Pipe Thimbles.

O. K. Mfg. Co., Buffalo, N. Y.

Stove Repairs.

Clark, Henry N. Co., Boston, Mass.
Heath, C. C. & Co., Phila., Pa.
Howes, S. M. Co., Boston, Mass.
Marcy Stove Repair Co., 74 Beekman St., N. Y.
Metropolis Sheet Metals & Stove Repairing Co., Newark, N. J.
Troy Nickel Works, Troy, N. Y.

Stove Trimmings, &c.

Shields, W. H. & Co., Troy, N. Y.
Troy Nickel Works, Troy, N. Y.

Stove Trucks.

Arcade Mfg. Co., Freeport, Ill.
Howes, S. M. Co., Boston, Mass.

Stoves and Ranges.

Barstow Stove Co., Providence, R. I.
Beckwith, P. D., Est. of, Dowagiac, Mich.
Bergstrom Bros. & Co., Neenah, Wis.
Boynton Furnace Co., 207 Water Street, New York.
Brand Stove Co., Milwaukee, Wis.
Champion Steel Range Co., Cleveland, Ohio.
Dighton Furnace Co., Taunton, Mass.
Floyd, Wells & Co., Royersford, Pa.
Fuller & Warren Co., Troy, N. Y.
Giblin & Co., Utica, N. Y.
Hess-Snyder Company, Massillon, Ohio.
Home Stove Co., Indianapolis, Ind.
Joliet Stove Works, Joliet, Ill.
Magee Furnace Co., Boston, Mass.
Pittsburgh Stove & Range Co., Pittsburgh, Pa.
Sheppard, Isaac A. & Co., Phila., Pa.
Smith & Anthony Co., Boston, Mass.
Somerset Stove Foundry Co., Somerset, Mass.
Stamford Foundry Co., Stamford, Ct.
Thatcher Furnace Co., 240 Water St., N. Y.
Walker & Pratt Mfg. Co., Boston, Mass.
Weir Stove Co., Taunton, Mass.
White, Warner Co., Taunton, Mass.
Willard, Wm. G., St. Louis, Mo.

Stoves and Ranges. Gas.

Dighton Furnace Co., Taunton, Mass.
Howes, S. M. Co., Boston, Mass.
Metropolis Sheet Metals & Stove Repairing Co., Newark, N. J.
Standard Lighting Co., Cleveland, O.

Stoves and Ranges. Oil, Vapor and Gasoline.

Heath, C. C. & Co., Philadelphia, Pa.
Standard Lighting Co., Cleveland, O.

Tank Heaters.

American Radiator Co., Chicago, Ill.

Tanks. Steel and Wood.

Edwards, J. H., 59 Park Place, N. Y.

Terne Plates.

American Tin Plate Co., New York.
Taylor, N. & G. Co., Phila., Pa.

Tinners' Tools. Machines and Supplies.

Berger Bros. Co., Phila., Pa.
Bertsch & Co., Cambridge City, Ind.
Bliss, E. W. Co., Brooklyn, N. Y.
Bruce & Cook, 186 to 190 Water St., New York.
Follansbee Bros. Co., Pittsburgh, Pa.
Keene, Geo. C. & Co., Cincinnati, O.
Meurer Bros. Co., Brooklyn, N. Y.
Niagara Machine & Tool Wks., Buffalo, N. Y.
Ohl, Geo. A. & Co., Newark, N. J.
Peck, Stow & Wilcox Co., 27 Murray St., New York.
Stiles & Parker Press Co., Brooklyn, N. Y.
Weiss, H. & Co., 20 Cliff St., N. Y.

Tinners' Trimmings.

Vogel, Wm. & Bros. Brooklyn, N. Y.

Tin Plate.

American Tin Plate Co., New York.
Bruce & Cook, 186 to 190 Water St., New York.
Coe, Jas. A. & Co., Newark, N. J.
Follansbee Bros. Co., Pittsburgh, Pa.
Gummey, McFarland & Co., Phila., Pa.
McClure & Co., Pittsburgh, Pa.
Merchant & Co., Philadelphia, Pa.
Meurer Bros. Co., Brooklyn, N. Y.
Osborn, J. M. & L. A., Cleveland, Ohio.
Taylor, N. & G. Co., Philadelphia, Pa.

Tool Grinder.

Robertson Mfg. Co., Buffalo, N. Y.

Tools and Machines. Steam and Gas Fitters'.

Armstrong Mfg. Co., Bridgeport, Conn.
Curtis & Curtis Co., Bridgeport, Conn.
Saunders'. D. Sons, Yonkers, N. Y.

Torches, Plumbers.

A. D. Mfg. Co., Syracuse, N. Y.
Clayton & Lambert Mfg. Co., Detroit, Mich.

Valves.

Am. Steam Gage & Valve Mfg. Co., Boston, Mass.
Crosby Steam Gage & Valve Co., Boston, Mass.
Jenkins Bros., 71 John St., New York.
Monash-Younker Co., Chicago, Ill.
Morgan & Co., Chicago, Ill.

Ventilating Apparatus.

American Blower Co., Detroit, Mich.
Buffalo Forge Co., Buffalo, N. Y.

Ventilators and Chimney Caps.

Berger Bros. Co., Phila., Pa.
Buffalo Forge Co., Buffalo, N. Y.
Fenn, Geo. E., Boston, Mass.
Globe Ventilator Co., Troy, N. Y.
Kramer Bros., Dayton, O.
Merchant & Co., Philadelphia, Pa.
Meurer Bros. Co., Brooklyn, N. Y.
Washburne, E. G. & Co., 46 Cortlandt St., New York.

Ventilators and Chimneys.

Iwan Bros., Streator, Ill.

Washers. Valves. &c.

Marston, I. G. & Co., Boston, Mass.

Washing Machines.

Boss Washing Machine Co., Cincinnati, Ohio.
Wayne, Anthony Mfg. Co., Ft. Wayne, Ind.

Water Coolers.

National Enamelling & Stamping Co., 78 Beekman St., N. Y.

Water Closets.

Colwell Lead Co., 63 Centre St., N. Y.

Water Fronts.

Clark, Henry N. Co., Boston, Mass.

Water Heaters.

Davis Heater Co., Racine, Wis.
Kemp, C. M. Mfg. Co., Baltimore, Md.

Wind Gates.

Miner & Peck Mfg. Co., New Haven, Ct.

Window Frames, Metal.

Smith-Warren Co., Boston, Mass.

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THE METAL WORKER.

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Notices under this heading of reasonable length are inserted free of charge. Only those relating to employment are admitted. Write distinctly on one side of paper only, and do not use postal cards.

Original letters of reference should not be inclosed with replies to advertisements appearing in these columns as they are frequently mislaid and lost. A copy of the reference will serve the purpose.

HELP WANTED.

First-class WOOD PATTERN FITTER; a good position for the right man. Box 57, care *The Metal Worker*, 1205 Fisher Building, Chicago, Ill.. June 7

Competent man to take charge of sheet iron department of a manufactory making light sheet iron tanks, racks, &c.; one who is able to lay out and mark off work and handle 12 or 15 men. Address Box L, Station B, Cincinnati, Ohio. June 7

TINNER; good, first-class, all around man in town of 2500; must be sober, industrious and know his trade; married man about 30 years old who can speak German preferred; a steady job for the right man. H. C. Mylander, Oak Harbor, Ohio. June 7

SOLICITOR and ESTIMATOR for cornices, skylights and roofing; one acquainted in New York City. "Skylight," care *The Metal Worker*, New York. June 7

WORKING FOREMAN; first-class wages to an up to date man; must be young, sober, a first-class mechanic in cornice, steel ceiling and all kinds of sheet metal work, and must be fast and accurate in getting his work out; also want a first-class outside cornice man who can put up any work from plans; none other will be considered. San Francisco Cornice Company, 12-20 Florida street, San Francisco, Cal. June 7

Six first-class union TINNERS; wages, 35 cents per hour; steady work for good men. Duluth Corrugating & Roofing Company, Duluth, Minn. June 7

A good TINNER for inside and outside work; must understand furnace work and roofing; must be sober and reliable; steady job for the right man. Apply at once. Brennan & Adams, Brockport, N. Y. June 7

First-class TINNERS and SOLDERERS, immediately; none but sober men employed. Theo. G. Scheid, Bluffton, Ohio. June 7

A competent SALESMAN to represent a manufacturer of warm air furnaces and steam and hot water heaters, to travel in the Middle West; state age and experience; good references required. Address "Furnace and Boiler," care *The Metal Worker*, New York. June 7

Two first-class SHEET METAL WORKERS conversant with all kinds of roofing and furnace work; liberal terms to the right people. "Progressive," care *The Metal Worker*, New York. June 7

PLUMBER and STEAM FITTER for work in small towns; must be competent to handle the work alone; good steady job for a sober and reliable man. West Virginia Heating & Plumbing Company, Charleston, W. Va. June 7

First-class TRAVELING SALESMAN familiar with tin plate and sheet metal trade to represent us in New York State territory; one with an established trade preferred; to commence at once. American Tin & Terne Plate Company, 22 Wildey street, Philadelphia, Pa. June 7

Immediately, a good, all around, steady workman for country tin shop; must be able to do pump work, roofing, gas pipe and tin job work, with plumbing. "Tin Shop," care *The Metal Worker*, 1205 Chemical Building, St. Louis, Mo. June 7

PLUMBER; sober and good worker, for one month; $3 per day. Grimshaw & Redfield, West Hampton Beach, N. Y. June 7

MODELER; a good, steady and reliable worker on steel ceilings, quick at grasping ideas; for such a man a good opportunity is offered. "M. G.," care *The Metal Worker*, New York. June 7

Two first-class PLUMBERS; strictly sober and reliable men; reference required; wages, $3 per day. George E. Bauer, Port Washington, L. I., N. Y. June 7

At once, a good, all around PLUMBER; one that understands country work; must be sober, honest and a hustler; good wages to right party. Robinson Bros., East Quogue, L. I., N. Y. June 7

A good assortment TINNER, to work by piece work; must be good on wash boilers; one that can work one or two helpers to good advantage preferred; steady work to a competent and reliable man; a young man preferred. W. F. Janeway, Columbus, Ohio. June 7

At once, a sober and reliable young man who has worked at the tinsmith trade four or five years. Box 157, Gaffney, S. C. June 7

GALVANIZED IRON and TIN METAL WORKER; one accustomed to making oil tanks, cans and specialties. J. Helbig, 254 Pearl street, New York. June 7

SALESMAN wanted for city, for handling oil and varnish tanks, painters' supplies, tin, copper and galvanized specialties. J. Helbig, 254 Pearl street, New York. June 7

A first-class TINNER and CORNICE MAKER who is willing to do guttering and repairing when necessary; steady work and good salary to right man; must be a sober man, no other will be employed; a married man preferred. New Globe Cornice Works, Decatur, Ill. June 7

A good all around TINSMITH; one who has worked at cornice work preferred. Alfred Martin & Co., 312 and 314 Market street, Rockford, Ill. June 7

At once, one first-class TIN and SHEET IRON WORKER. "W. W. R.," Box 805, Belmar, N. J. June 7

A first-class ENAMELER that is experienced and has a thorough knowledge of enameling on steel and cast iron; first-class opportunity for the right man. "J. C.," care *The Metal Worker*, New York. June 7

An all around TINNER who is familiar with hot air and hot water heating plants and can do plumbing for country trade; highest wages and steady job for the right person. Plummer & McNiven, Langdon, N. D. June 7

A first-class TIN HOUSE FOREMAN; must be competent man. "Foreman," care *The Metal Worker*, Park Building, Pittsburgh, Pa. May 31

Men familiar with the putting up of metal ceilings. Lyles & Mills Metal Ceiling Company, 231 William street, New York. May 31

STOVE SALESMAN to travel Ohio, West Virginia, Indiana, and Michigan, representing a manufacturer making a complete line of gas ranges, heating stoves and steel ranges: advise age, experience, references and salary expected. "Ranges," care *The Metal Worker*, New York. May 31

Good all round TINNER and PLUMBER; willing and able to clerk in store if necessary; steady job to right man in live, up to date town of 1200 inhabitants. O'Neill and Gilmer, Sisseton, S. Dak. M. R. O'Neill, Fargo, N. Dak. May 31

A good GALVANIZED IRON CORNICE WORKER, who can cut and lay out his own patterns and take quantities from plans. Frank R. Jarrell, Lexington, Ky. May 31

DRAFTSMAN wanted on cornice and skylight work; first-class man only; state experience and wages desired. David Lupton's Sons, Allegheny avenue and Tulip street, Philadelphia, Pa. May 31

A reliable TINNER and SLATER can have a yearly contract at good wages. Apply at once to C. C. Henrie, Xenia, Ohio. May 31

At once, an experienced PLUMBER capable of making wiped joints and understanding plumbing thoroughly; also work at roofing and gutter work; must be sober and reliable; steady work to right man. Box 915, Bennington, Vt. May 31

One first-class TINNER, who can do all kinds of job work in the shop in tin and galvanized iron. Also two first-class CORNICE WORKMEN; need not be pattern cutters, but must understand putting up work, in the shop and outdoors; none but first-class, sober and reliable men need apply; good wages. Apply at once to the Houston Cornice Works, Houston, Texas. May 31

A practical man for country shop; tinning, plumbing and heating; steady work. The Biggs Company, Trumansburg, N. Y. May 31

A good all round TINNER and SHEET IRON WORKER; must be sober and reliable; give references; state wages wanted; a good quick workman can have steady work the year around. Byrne and Maury, Rossville, Vermillion County, Ill. May 31

First-class CORNICE CUTTER and GALVANIZED IRON WORKER; must be sober and reliable; permanent position to the right man. J. N. McCausland & Co., Charlotte, N. C. May 31

For Northern New Jersey, adjacent to New York, an experienced SALESMAN for ranges and furnaces; kindly state experience and terms. "R. W. H.," care *The Metal Worker*, New York. May 31

Several good SHEET IRON WORKERS as road mechanics; those used to blow pipe work preferred; state age, wages expected, and where last employed. Apply to the Ohio Blow Pipe Company, corner Seneca and Michigan streets, Cleveland, Ohio. May 31

SLATE and TIN ROOFERS; steady work for sober, reliable men; none others need apply; state wages wanted. A. C. Hathorne, Burlington, Vt. May 24

First-class TINSMITH for all round work; steady job for right man. Tracy Bros., Ballston Spa, N. Y. May 24

A competent man as FOREMAN of a brass foundry and finishing plant engaged in the manufacture of plumbers' brass goods. P. O. Box 42, Salem, N. J. May 24

SITUATIONS WANTED.

By an experienced CORNICE and SKYLIGHT MAN; can work from plans as cutter and foreman or assistant in cornice shop; also understands estimating. Box 58, care *The Metal Worker*, 1205 Fisher Building, Chicago, Ill. June 7

By a first-class SALESMAN, a position with some good house; experienced in hardware, tinware, stoves and house furnishing goods; speak German and English. "Wholesale or Retail," care *The Metal Worker*, New York. June 7

By a first-class STEAM FITTER'S HELPER; eight years' experience; can do fitting and understand roofing and general jobbing. John L. Watrous, 363 West Thirty-fourth street, New York. June 7

PLUMBER, GAS and STEAM FITTER who thoroughly understands Durham and pipe fitting; good habits; wishes steady job near New York at moderate wages. M. A. Dooley, 140 Tenth avenue, New York. June 7

Permanent situation by a steady, sober and reliable TIN and SHEET IRON WORKER; nine years' experience at in and outside work, tin roofing, steam heating and pump work; will work for $11 per week for permanent situation; references. "S. G.," Brattleboro, Vt. June 7

PLUMBER and GAS FITTER, 16 years' experience, handy at range, heater and furnace work, can do all classes of work and furnish good reference; strictly sober; will accept steady job for $15 per week; city or country. Chas. Young, care *The Metal Worker*, New York. June 7

PLUMBER, licensed, wants steady job with tinsmith who controls some plumbing trade; will work reasonable for steady job; handy at all kinds of jobbing at tinsmithing; can estimate and conduct plumbing business from A to Z; can furnish reference; strictly sober; age 35; at liberty June 15; city or country. Richard Norton, care *The Metal Worker*, New York. June 7

A situation as STOVE SALESMAN in Ohio, Indiana, West Virginia or Michigan; have had 26 years' experience and am thoroughly up to date on all kinds of gas and steel ranges, heating and cooking stoves. Box 154, Jeffersonville, Ind. June 7

PLUMBER wants position in small town; no objection to distance or place; at present residing in Indiana. Box 56, care *The Metal Worker*, 1205 Fisher Building, Chicago, Ill. June 7

By young married man, 22, position as SHEET METAL WORKER; willing to go anywhere; five years' experience; can furnish best of references. Box 205, Islip, N. Y. June 7

By young man, at plumbing; just out of his time; would like to secure job in shop where he could get good show at work. A. T. Armstrong, cor. Church and Elm streets, Hoosick Falls, N. Y. June 7

By experienced SALESMAN, position with foundry or manufacturers selling steam and hot water boilers to the trade in Greater New York; practical engineer; well acquainted; can control trade; moderate fixed salary or low salary and commission for immediate connection. "Heater," care *The Metal Worker*, New York. June 7

Young man experienced in the sale of boilers, radiators and steam supplies and familiar with the trade in the vicinity of New York City and New England, desires connection with good house; prefers inside position; can give satisfactory references. "Steam Goods," care *The Metal Worker*, New York. June 7

By a man with 15 years' experience, position as SUPERINTENDENT of a stove foundry; am a practical man and understand the business in detail; competent to manage all departments of foundry making stoves, ranges and heaters; understand the grading and mixing of irons, and can handle help; first-class references given. "Superintendent," care *The Metal Worker*, New York. June 7

PLUMBER of 20 years' experience wants a position in A1 firm; thoroughly competent to take full charge, lay out work, jobbing or overhauling; also steam or hot water heating of the various systems; has knowledge of ice machine and brine piping; able mechanic; can construct any job of heating, high or low pressure; A1 reference. "B.," 1624 First avenue, New York. June 7

By PLUMBER; city or country, city preferred; holds a New York City license; is an expert on sanitary matters, a good and thorough mechanic; understands steam and hot water heating; capable of running shop or large job or managing all the repairs of an estate; strictly temperate and thoroughly reliable; please state wages. Charles Read, 1297 St. Mark's avenue, Brooklyn, N. Y. June 7

As ESTIMATOR and to take off quantities for a large concern, by man with 15 years' experience: has A1 references. "Cornices," care *The Metal Worker*, New York. June 7

By PLUMBER; city or country; licensed New York and Yonkers; capable of taking charge or estimate or take charge of shop or will work for boss jobbing or new work; state wages and amount of work. George Coon, 779 Eleventh avenue, New York. June 7

By a practical man with 20 years' experience as SUPERINTENDENT or FOREMAN in a cornice or skylight shop; can do drafting, cutting, estimating; also can handle men to advantage; best references. Emrik Kunay, 96 Avenue A, New York. June 7

By practical DRAFTSMAN and FOREMAN of cornice, skylight and sheet iron shop; has had charge of shop of 45 men; 28 years old; references. "Girard," care *The Metal Worker*, 117 South Fourth street, Philadelphia, Pa. June 7

By PLUMBER; 26 years old; steady work in country; $2 per day. "W. Y. Z.," care *The Metal Worker*, New York. June 7

By PLUMBER; skilled mechanic; strictly sober; will go anywhere. "Plumber," 4116 Main street, Pittsburgh, Pa. June 7

By first-class PLUMBER; 15 years' experience at gas fitting, pipe fitting and furnace work; sober and industrious; best of references; wages, $3 per day; steady work, city or country. James Yancer, care Miss Barry, 2 East 118th street, New York. June 7

By first-class PLUMBER; city or country; 18 years' experience; best reference. Wm. Brennan, 233 East Eighty-first street, New York. June 7

By a first-class PLUMBER; city or country; best of references. J. J. Shea, 1331 Third avenue, New York. June 7

By first-class PLUMBER with 15 years' experience; best references; city or country. D. Dowling, 221 Third avenue, New York. June 7

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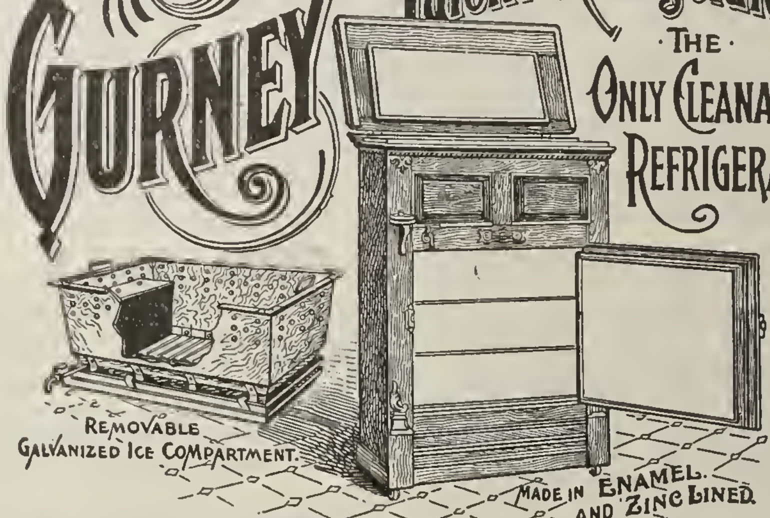
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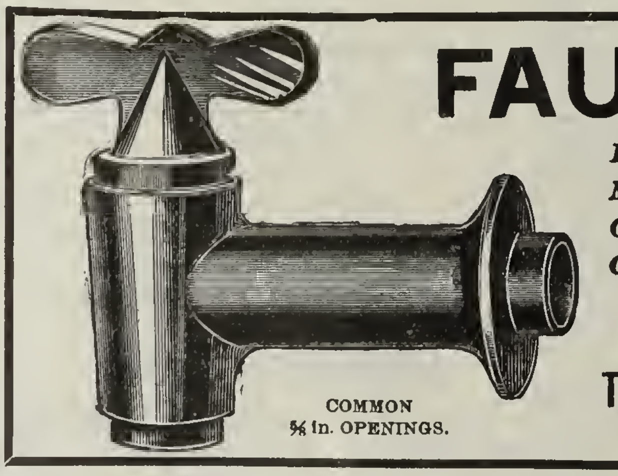
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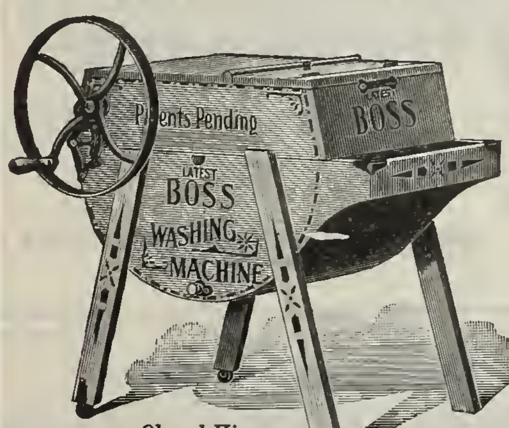

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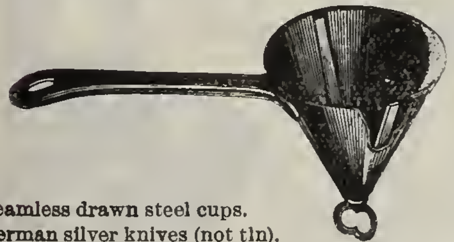

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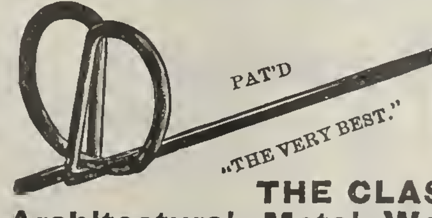

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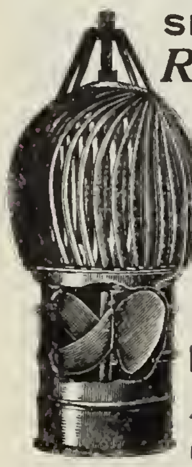

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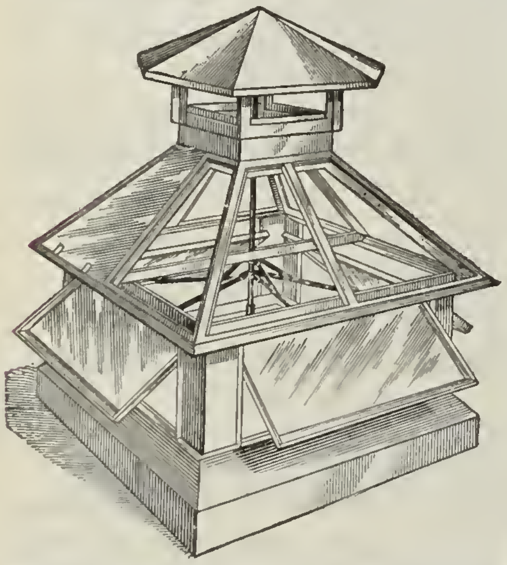

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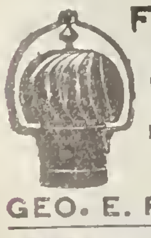

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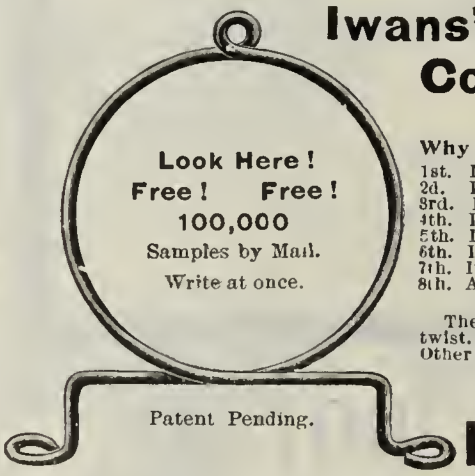

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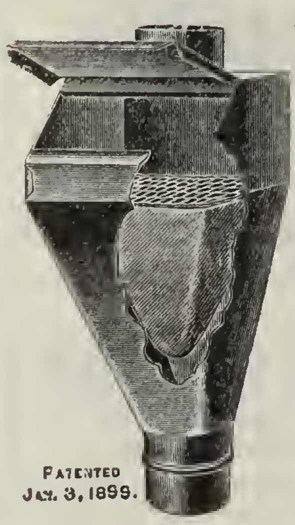

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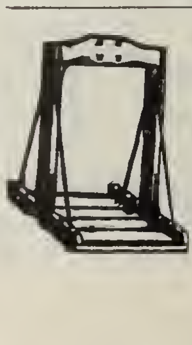

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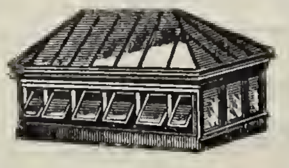

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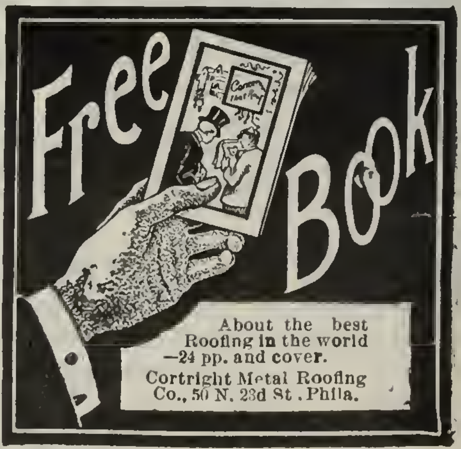

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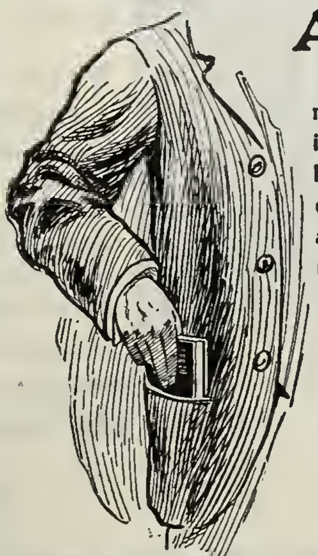

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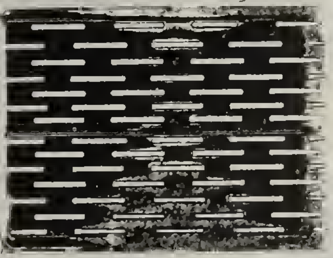

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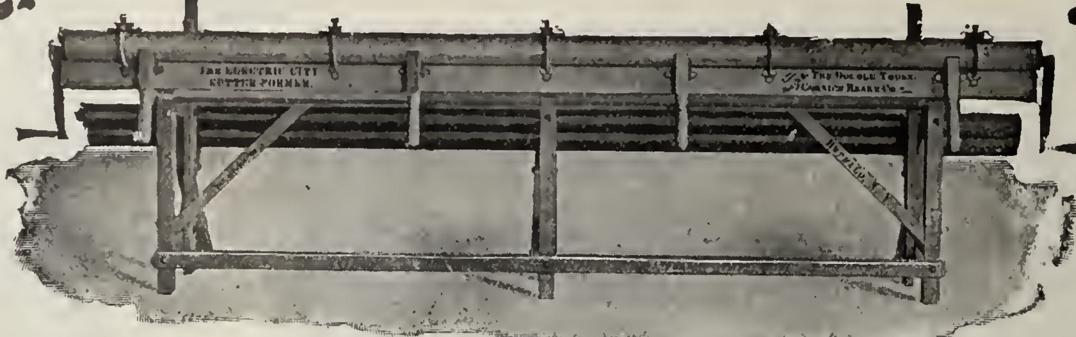
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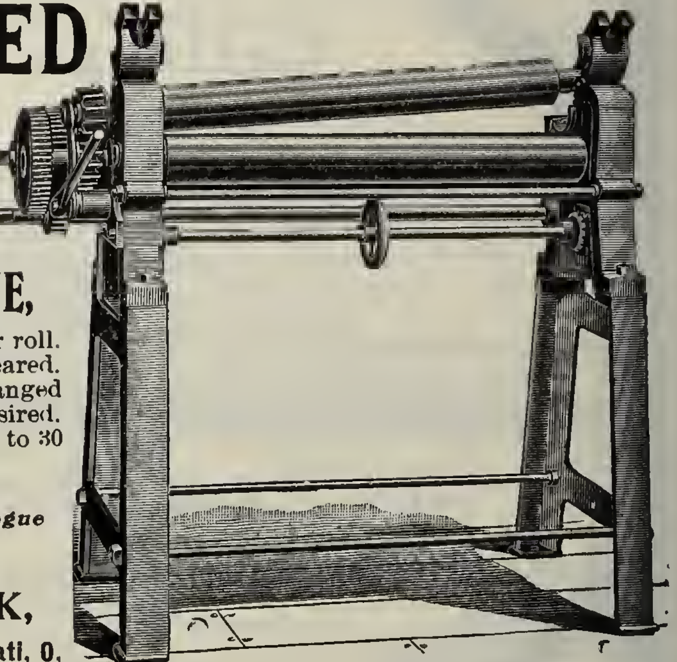

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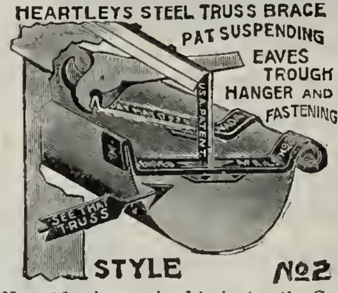
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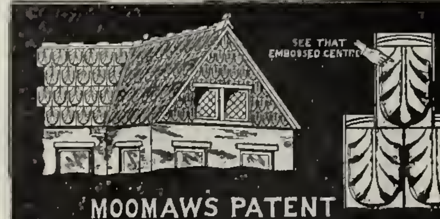

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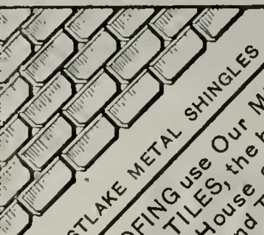

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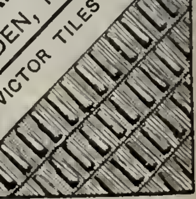

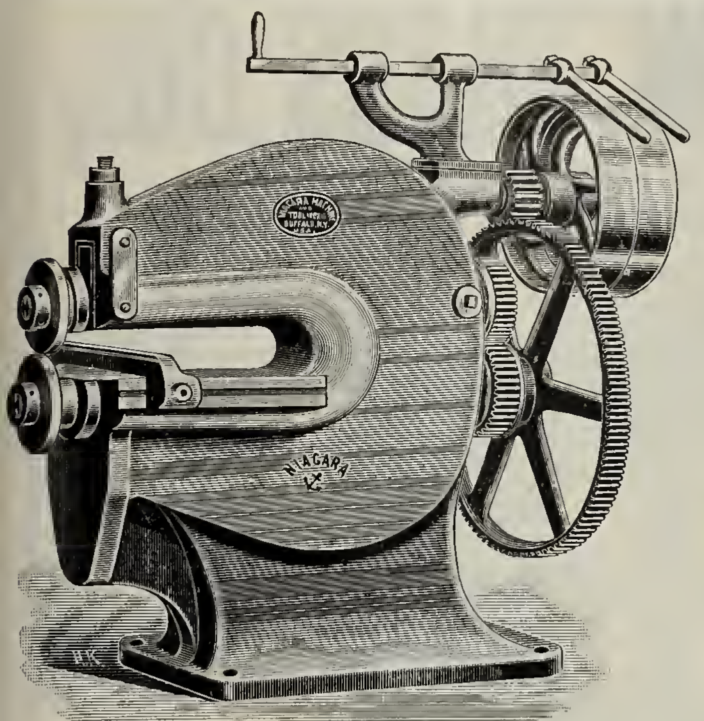

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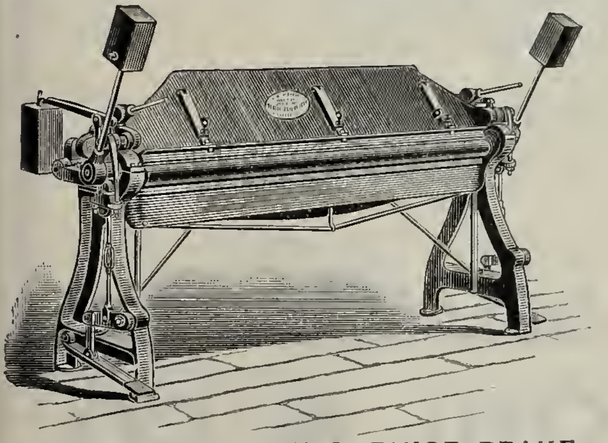

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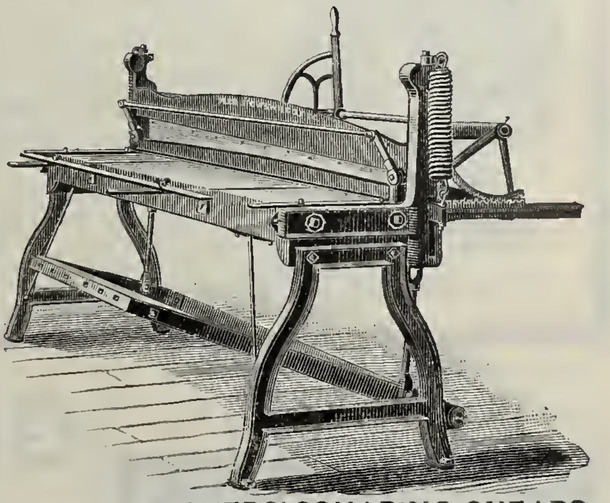

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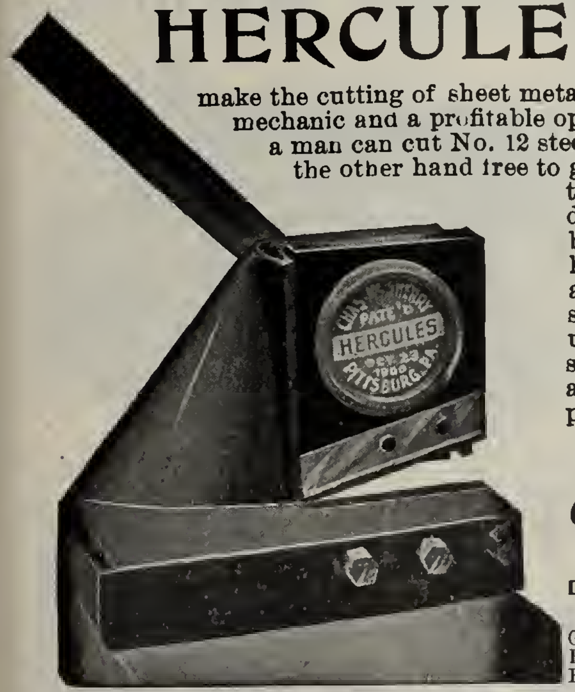

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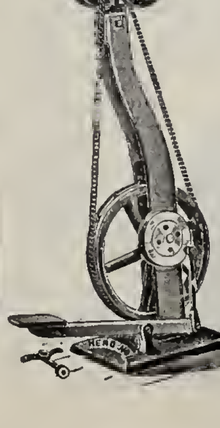

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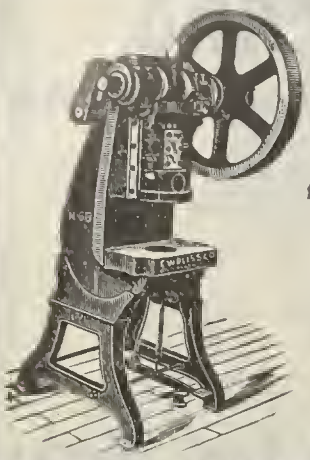

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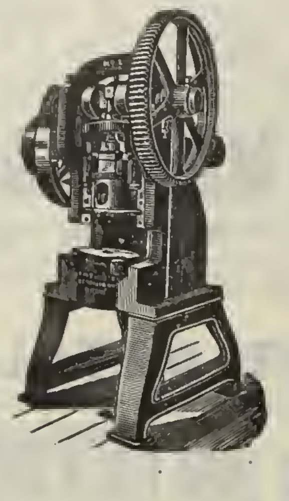

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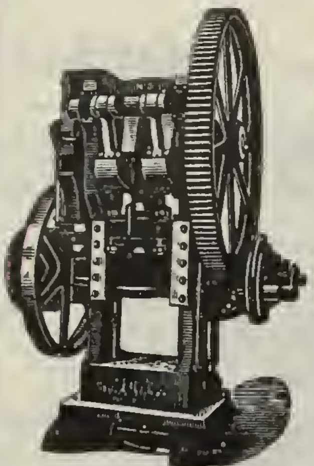

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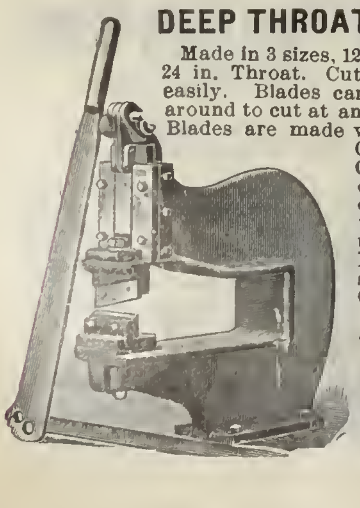

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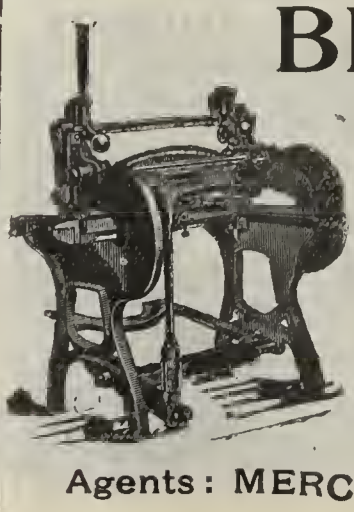

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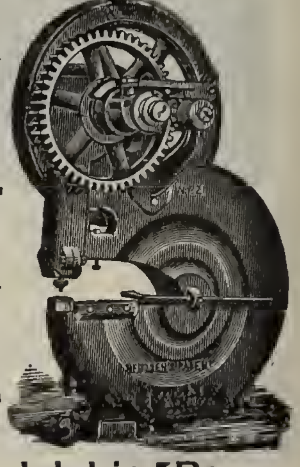

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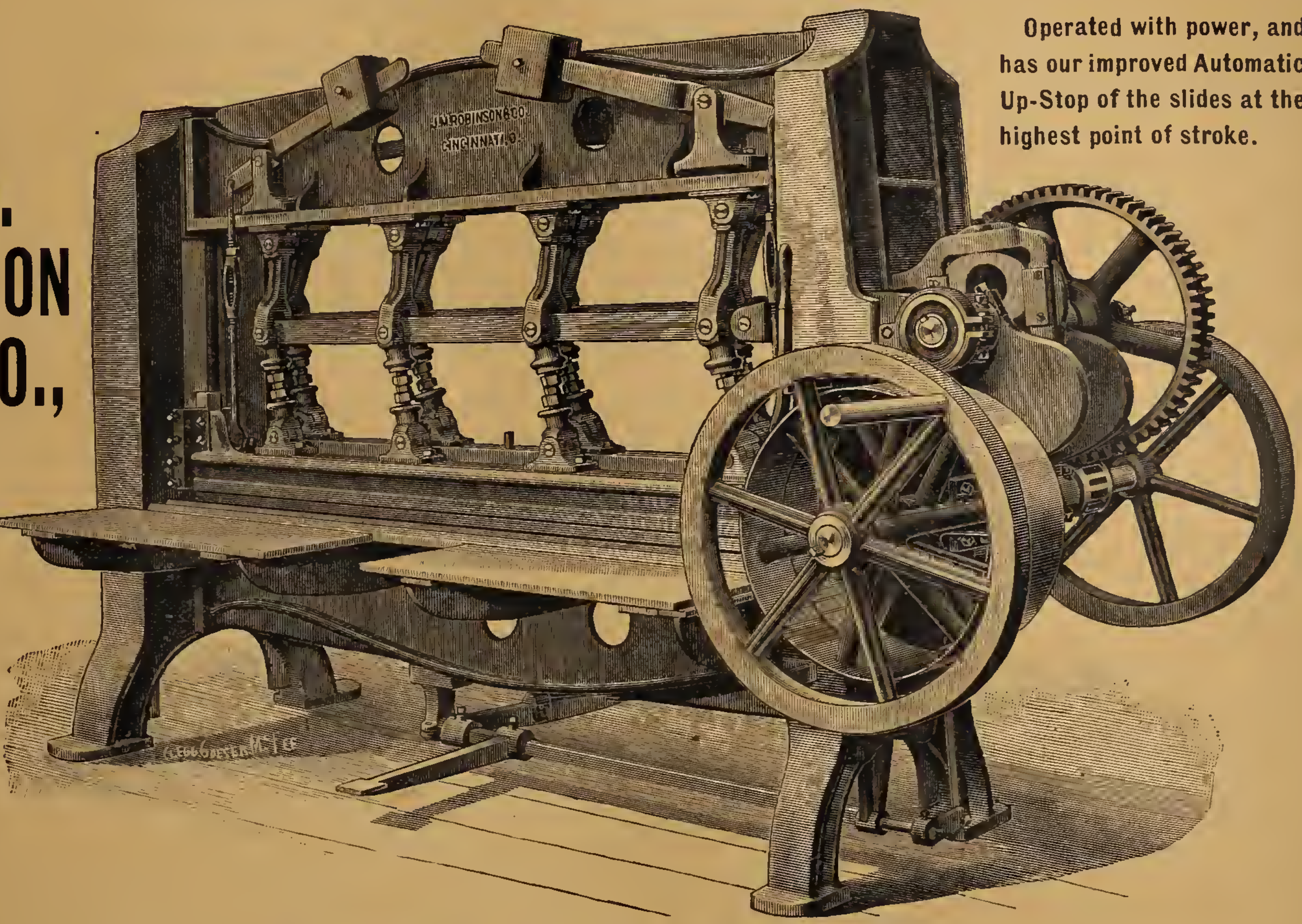
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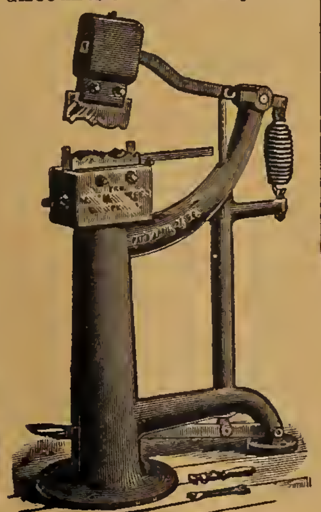

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The Metal Worker

A WEEKLY JOURNAL OF THE ROOFING, STOVE, CORNICE, TIN, PLUMBING AND HEATING TRADES.

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LVII.
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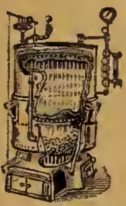

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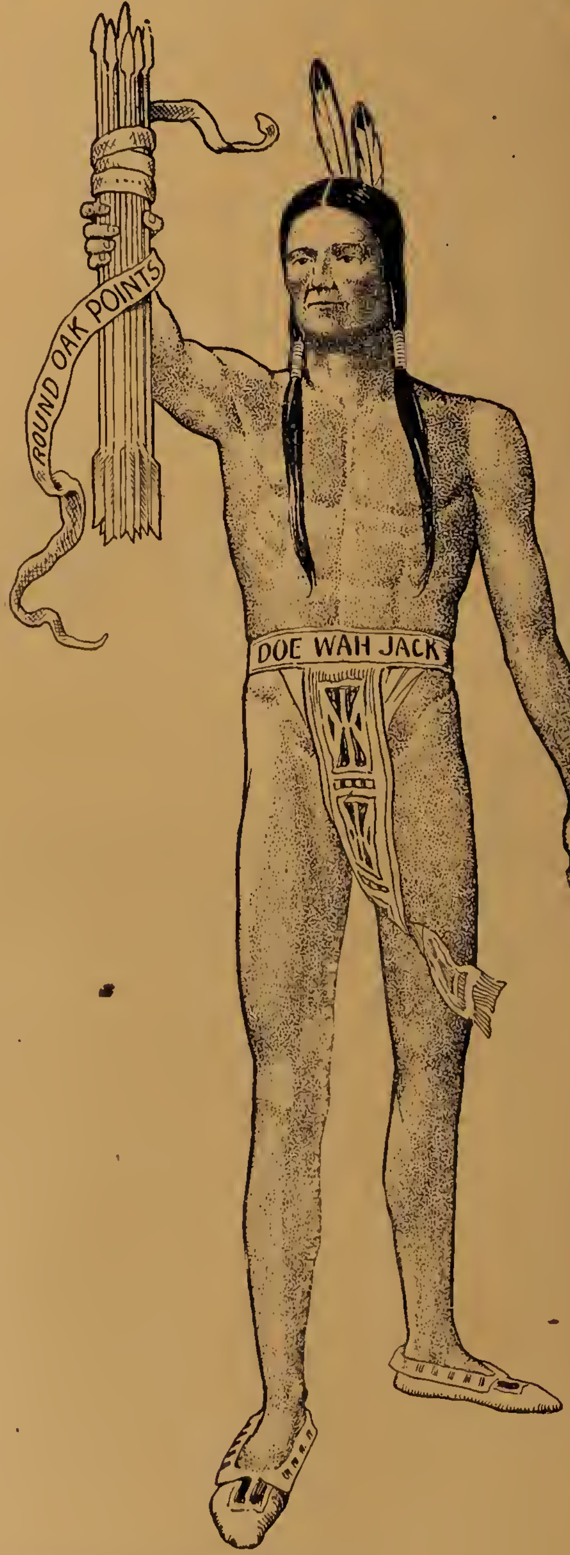

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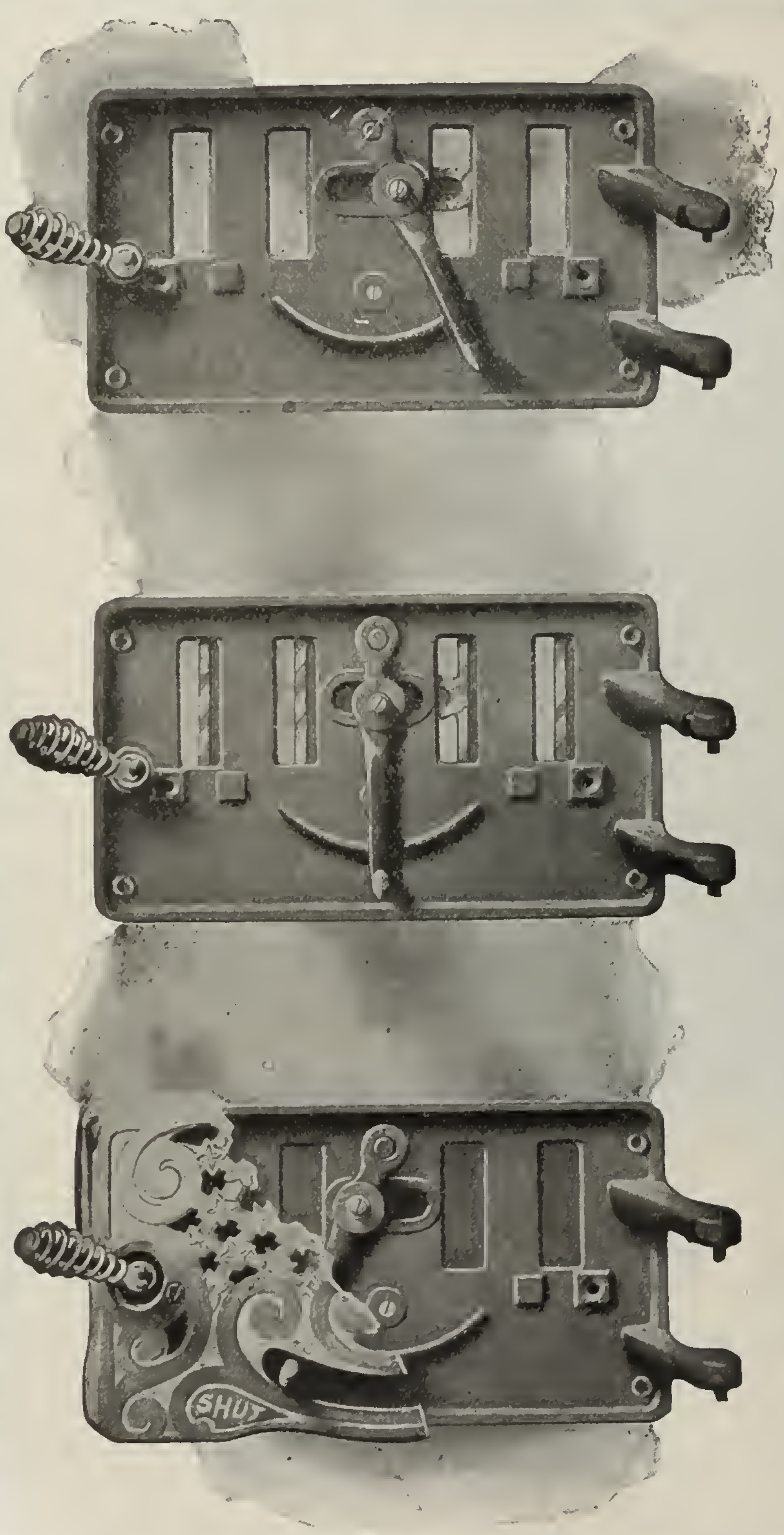

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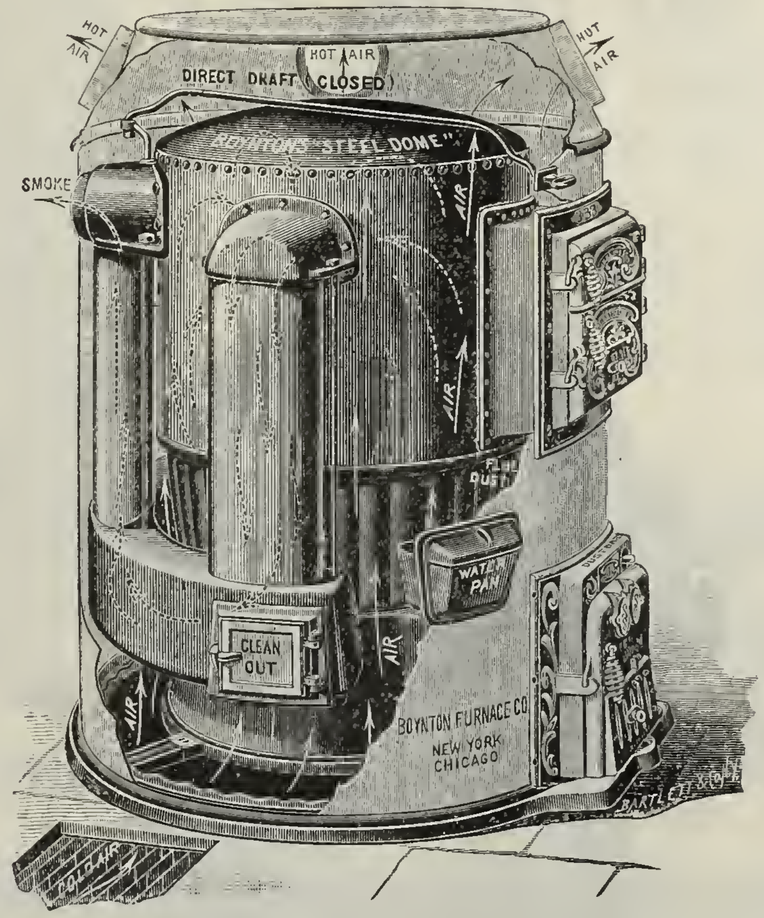

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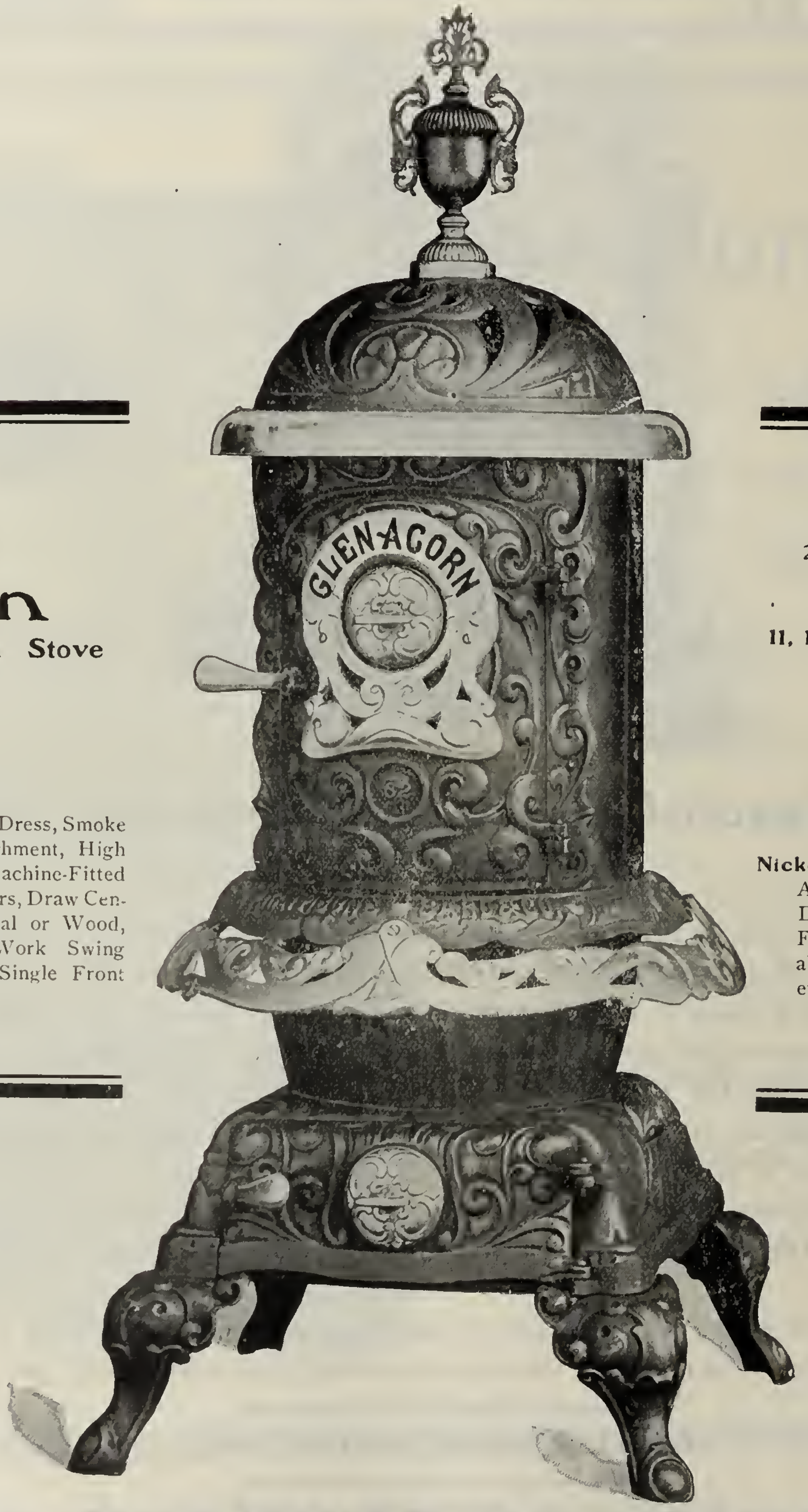

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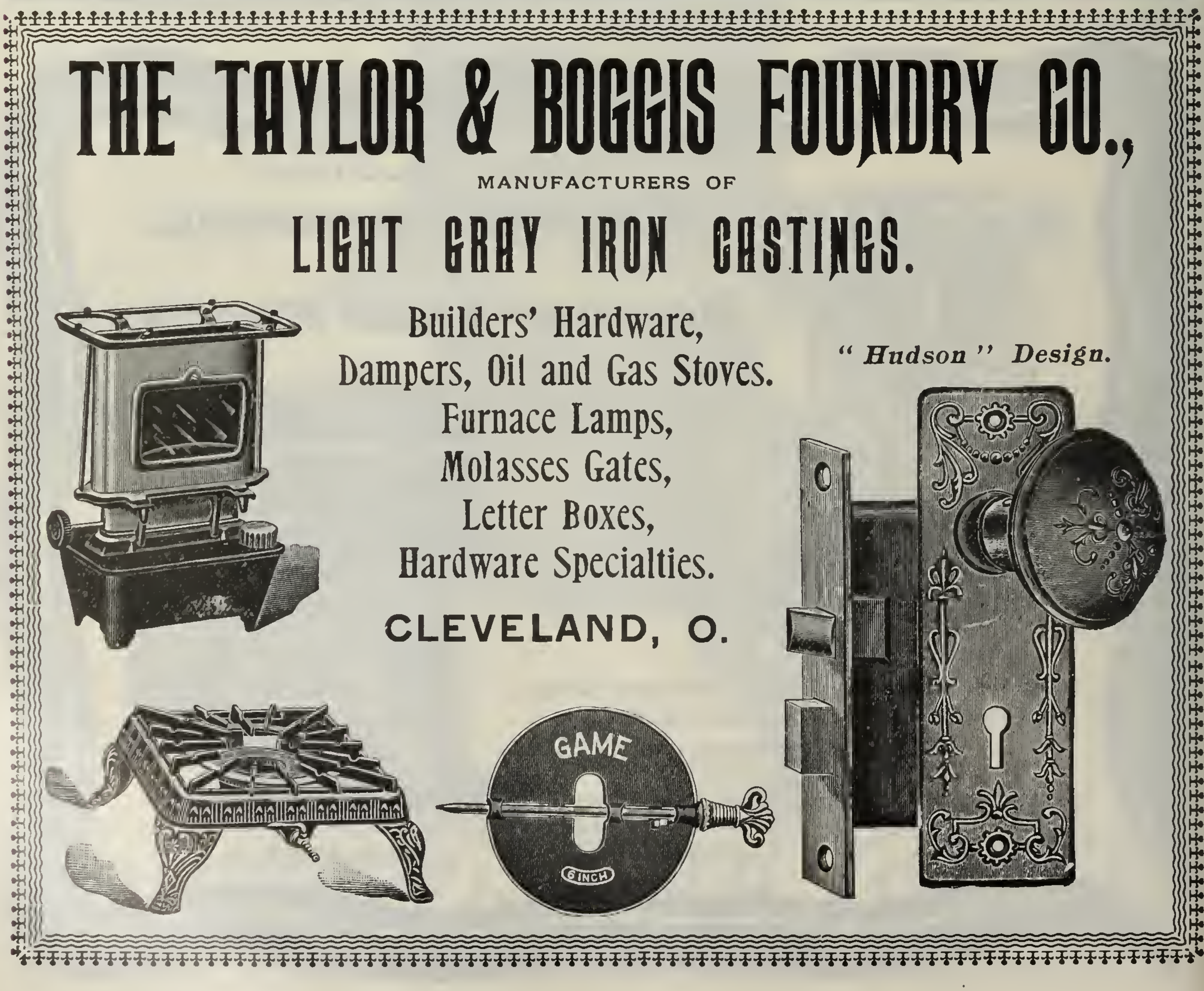

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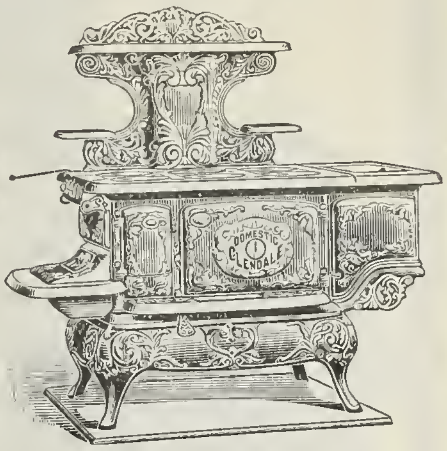

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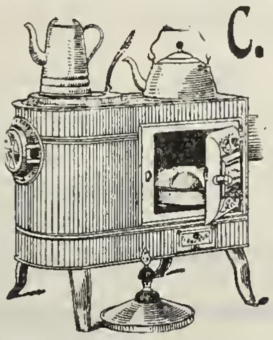

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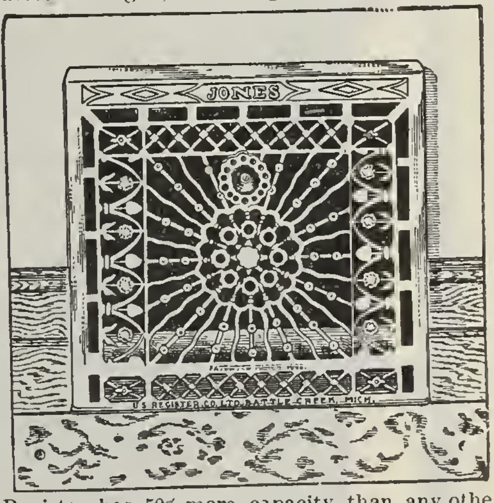
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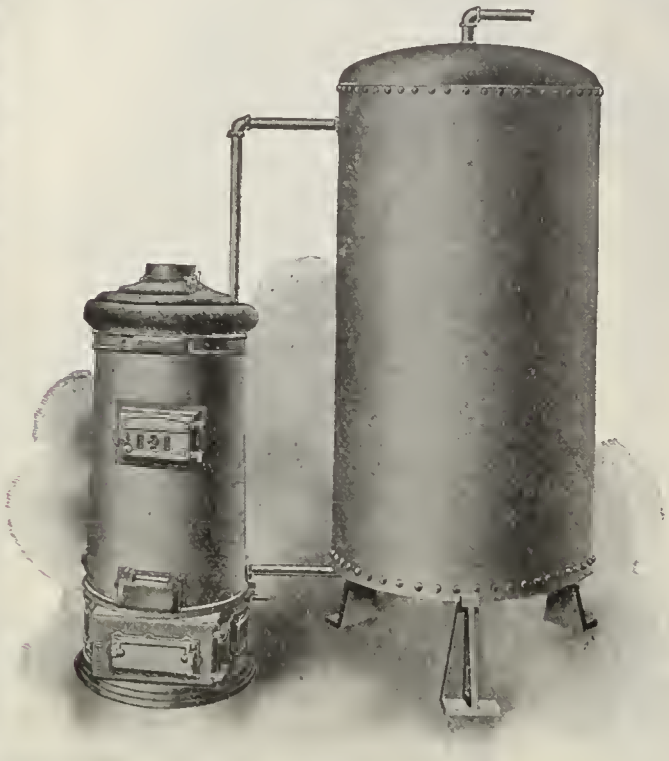

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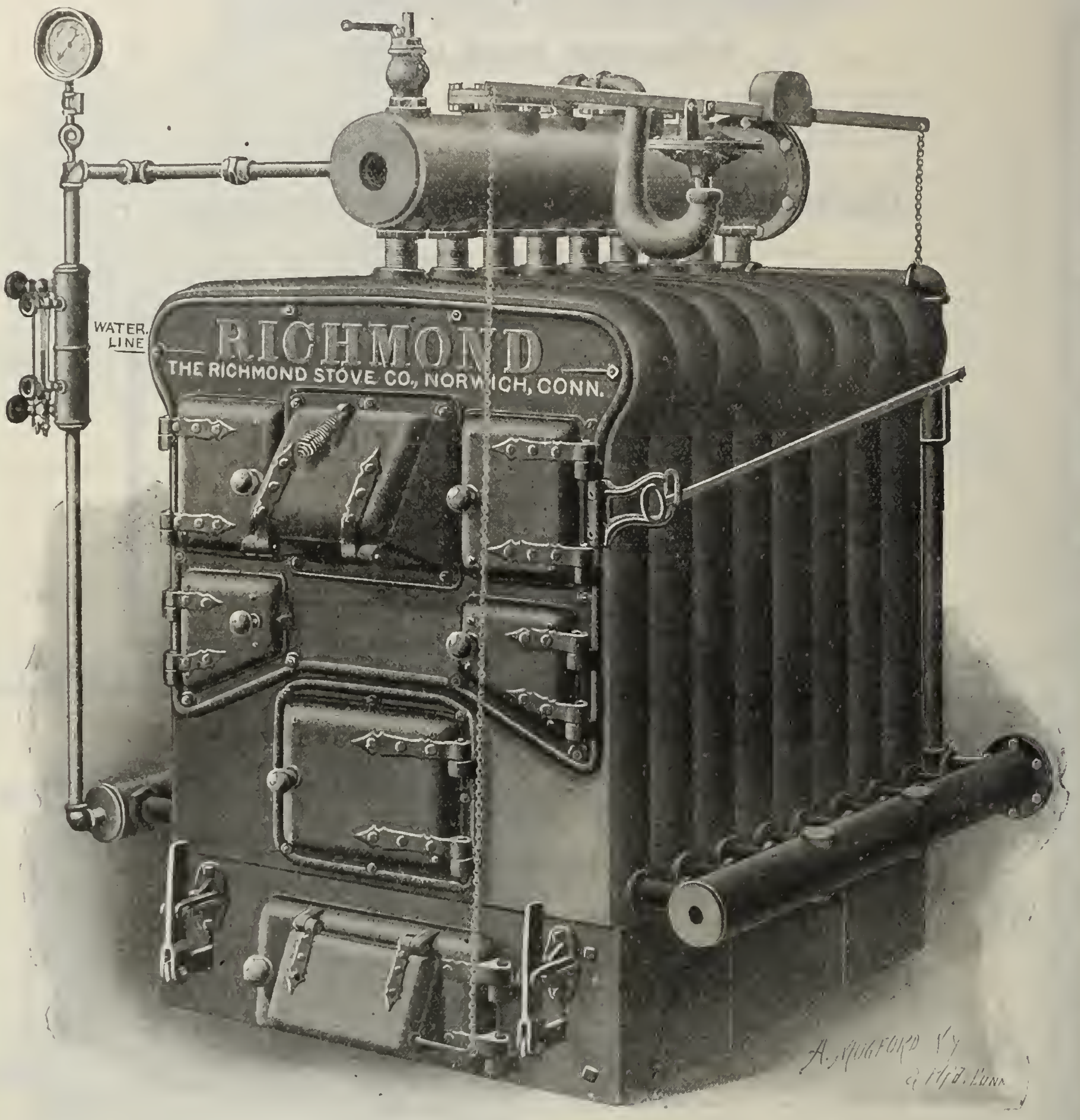

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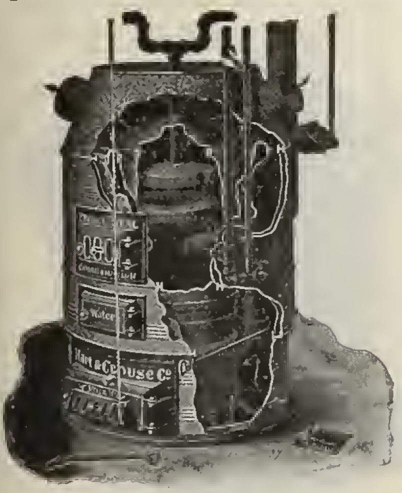

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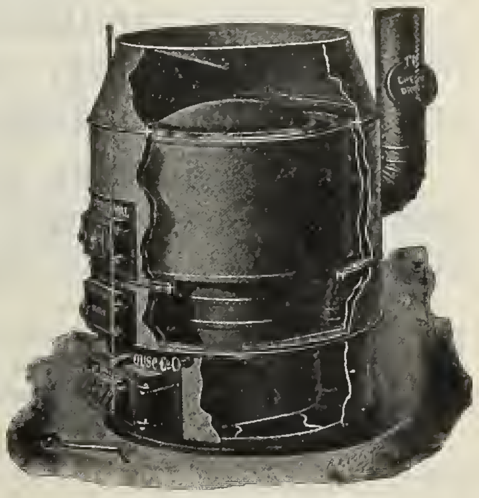
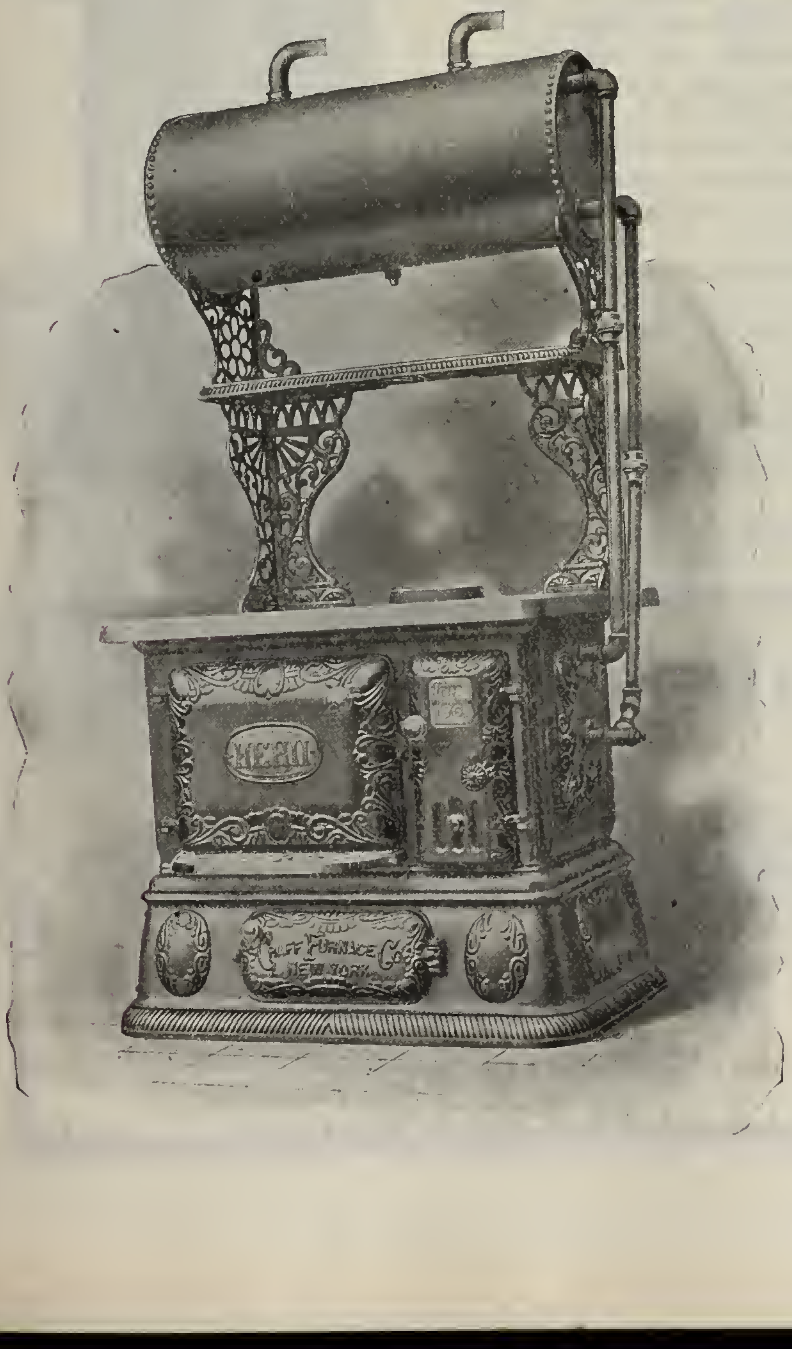
STEAM,
HOT AIR.





Graff Furnace Co. New York

OUR IMPROVED

HERO Ranges

ARE VERY ATTRACTIVE.

Furnished in Several Sizes and Styles.
Heavy and Well Made.
Perfect in Operation.

OUR VERY POPULAR

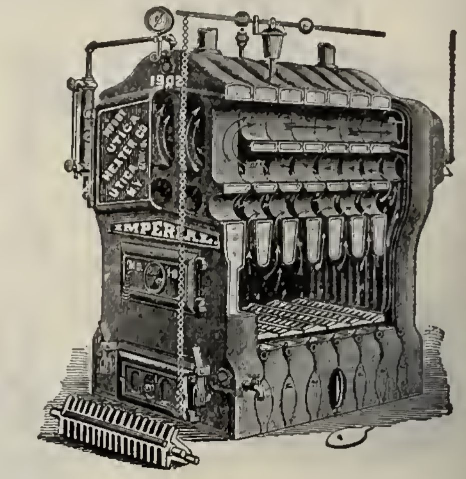
FAULTLESS Ranges

Cannot be Surpassed.

Send for Range Catalogue

THE GRAFF FURNACE CO.
208 WATER ST., NEW YORK

SUPERIOR Steel Furnaces.
SUPERIOR Heaters.
UTICA Heaters.
IMPERIAL Sectional Boilers.
IMPERIAL Round Boilers.
KEYSTONE Boilers.
AUBURN Round Boilers.
IMPERIAL Radiators.
Double Safety Furnace Pipe.
Heating Contractors' Supplies.



Our Furnace Catalogue illustrates and describes our complete line of Hot Air Furnaces—*11 Different Styles, 48 Different Sizes*—for any kind of fuel, for any climate, and for all possible requirements.

We also manufacture round and sectional boilers for steam and hot water heating, and are in a position to sell you first-class two and three-column radiation at "ground floor" prices.

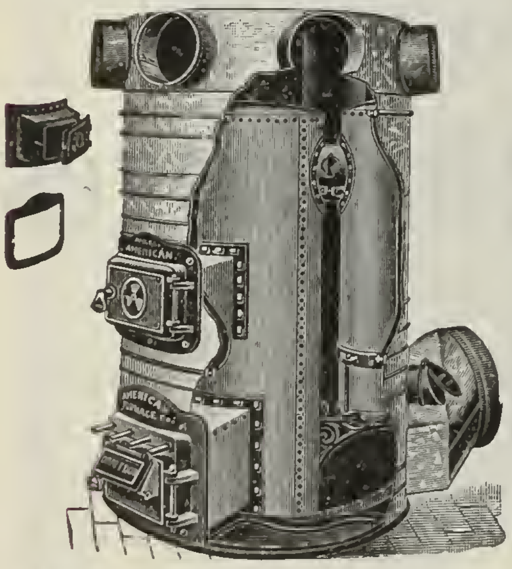
We are offering special inducements to dealers unacquainted with our lines, and it will be to your best interests to ask for our catalogues and prices. Do it To-Day.

UTICA HEATER COMPANY, General Offices, UTICA, N. Y.

NEW YORK CITY,
106-108 Beekman Street.

CHICAGO.
33 Dearborn Street.

BOSTON,
24 India Square.



Burn Hard or Soft Coal or Coke. Large Doors

Some Ripe Experience

Has come to us through watching the doings of dealers throughout the United States.

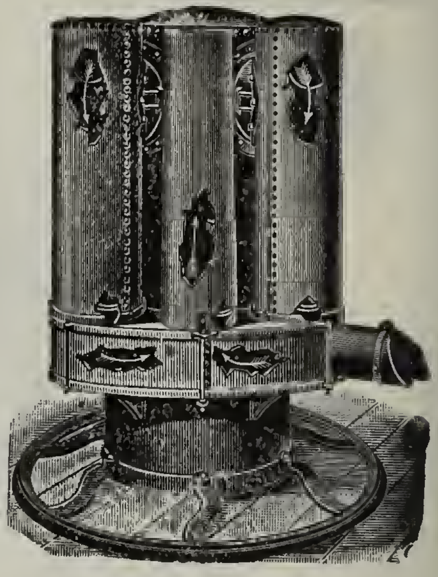
We find that the dealer who sells cheap furnaces not only loses ground in the furnace business but also has a falling off in his other lines.

On the other hand, we can say that the man who sells a good furnace and charges enough to do a good job will, in a few years, be the leading furnace man in his town and at the same time build up his other business.

The ***American Furnace*** is made for the better class of trade; is durable, clean and economical in fuel.

The American Furnace Co.,

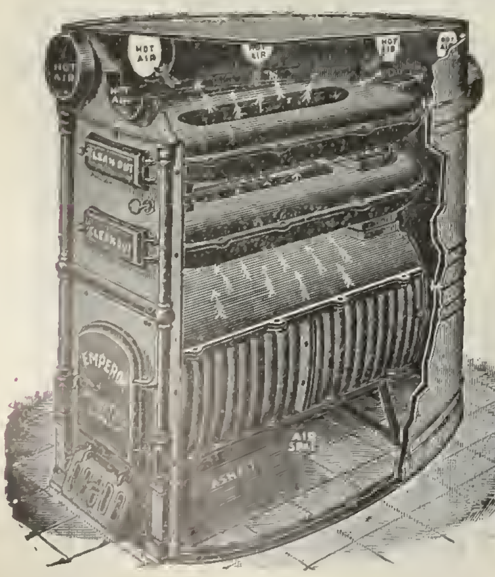
1911-13 PINE STREET, ST. LOUIS, MO.



Large Radiators, easy to clean out

Write for prices and secure the agency before the other fellow gets it

---



Emperor Furnaces

FOR WOOD.

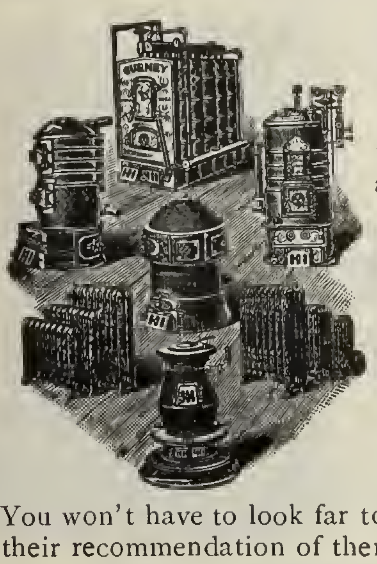
Simple, Safe, Durable. Economical in Fuel.

The Best and Cheapest Line of Wood Furnaces. . . .
Furnished for either Brick or Galvanized Iron Casing

SEND FOR CATALOGUE.

Bergstrom Bros. Co.

NEENAH, WIS.



Perfectly Natural.

A keen observer recently remarked that what displeased him most was to see people try to be what they are not. You're seemingly obliged to sell some apparatus on that basis, but never

"GURNEY" HEATERS,

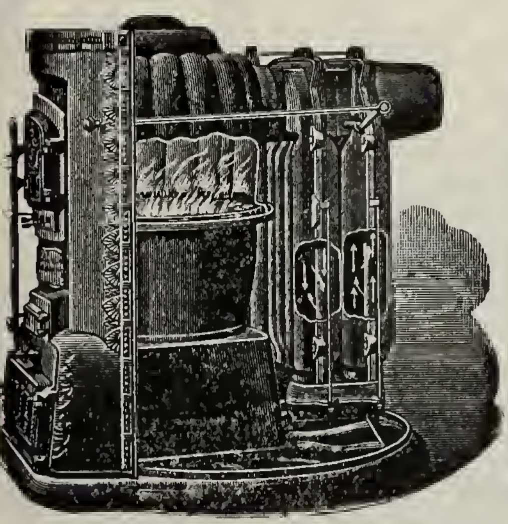
BRIGHT IDEA DORIC and 400 SERIES,.

You may claim what we claim for them in the fullest confidence. It's never necessary for you to stretch their efficiency, their durability, or their economical fuel consumption. It's never necessary to make any misstatements about their ratings, for each heater is honestly rated and will do exactly what we claim for it. "Gurney" Heaters, by the way, are sold, not on "saying" but on "doing." You won't have to look far to find people right in your locality who'll help you sell "Gurney" Heaters by their recommendation of them. Write for latest catalogue and agents' particulars.

Gurney Heater Mfg. Co.,

74 Franklin St., Boston. *111 Fifth Ave., New York City.*

Western Selling Agents, James B. Clow & Sons, 358 Franklin St., Chicago, Ill.



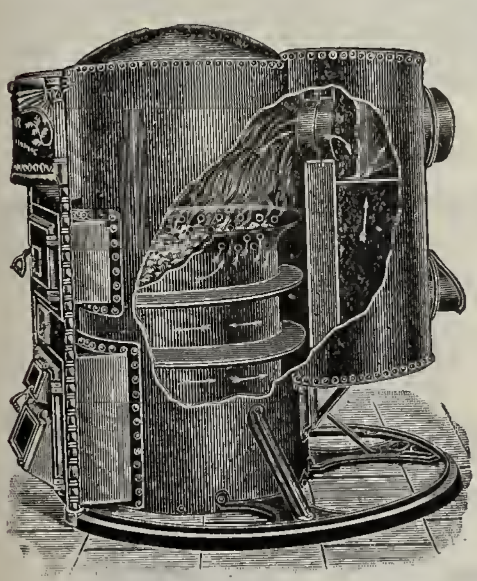
BENGAL

THE FURNACE IS *RIGHT*. THE PRICE IS *RIGHT*. A FURNACE THAT WILL GET TRADE AND HOLD TRADE.

LET US SEND YOU BOOKLET.

EASTERN SELLING AGENTS:
GURNEY & CO.,
Washington, Hanover and Elm Streets, Boston, Mass.

FLOYD, WELLS & CO., Royersford, Pa.
NEW YORK OFFICE, 210 WATER ST., R. W. HILLMAN, Manager.



WEIR ALL STEEL GAS AND SOOT CONSUMING FURNACE.

THE HEAVIEST STEEL FURNACE MADE.

Absolutely gas and dust tight. A great heat-producer but a fuel saver.

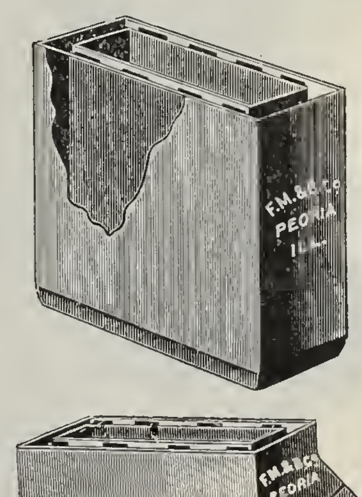
MANUFACTURED BY
THE MEYER FURNACE CO.,
1300-1304 S. Washington St.,
SEND FOR CATALOGUE. PEORIA, ILLS.

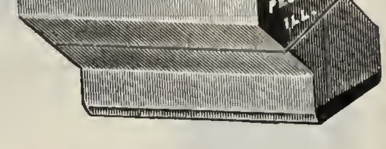
"The Handy Furnace Pipe."

MADE WITH A VIEW OF BEING SAFE.

The saving of labor in putting it up really makes it the cheapest hot air pipe on the market.

MANUFACTURED BY
F. MEYER & BRO. CO.,
SEND FOR CATALOGUE. PEORIA, ILLS.





STOVE REPAIRS

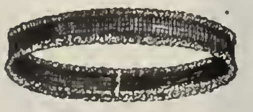
Bought from us entitle the purchaser to a 1000 Mile Book FREE on any railroad.

HAVE YOU RECEIVED ONE OF THEM?
WRITE FOR PARTICULARS.

CHAS. C. HEATH & CO., - -

HEADQUARTERS FOR

WICK RINGS

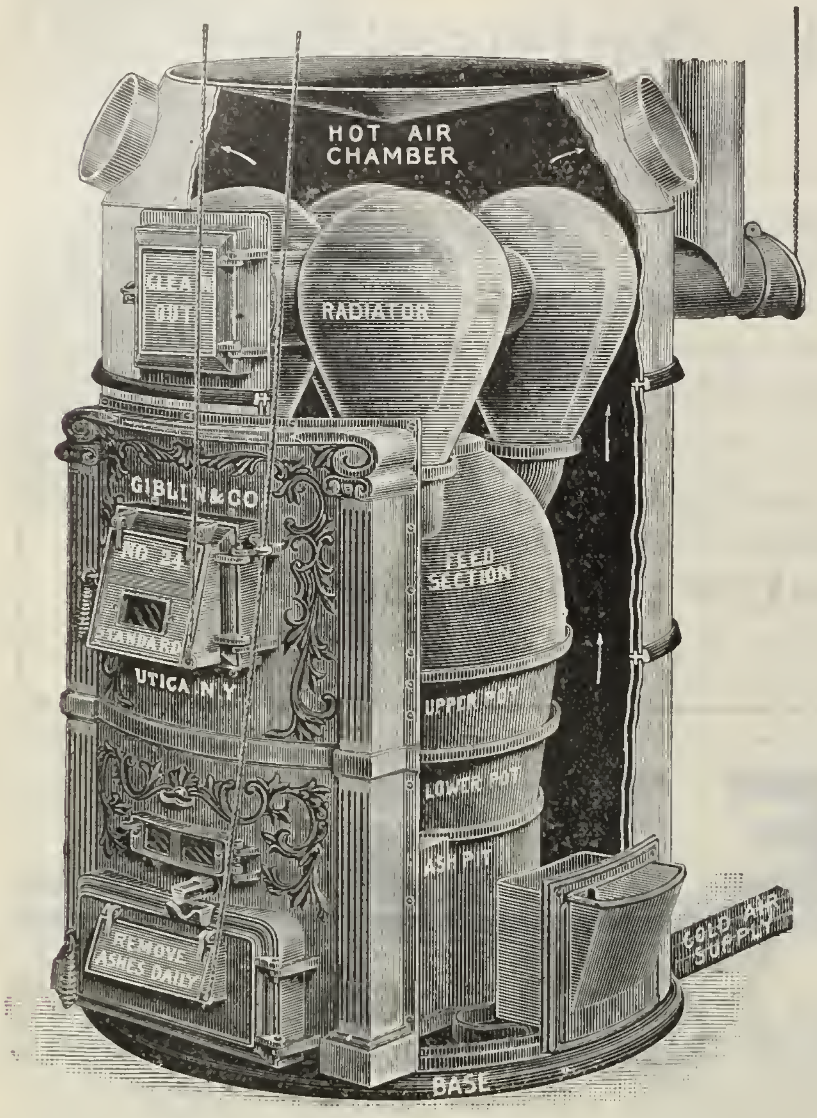


For all Blue Flame Oil Stoves made—at startling low prices.

ELECTRIC BLUE FLAME COOKS

Are what you want for Summer trade.

Philadelphia and Baltimore.



WORK WELL DONE AT LITTLE COST.

SOMETIMES

a furnace costs little but makes up the cheapness in the quantity of coal it consumes; sometimes a furnace costs a great deal and the extra cost is made up by the saving of the fuel; sometimes a furnace costs a moderate price and does the work well and saves fuel.

A FURNACE

of the latter class is shown herewith, and our catalogue shows it more thoroughly.

Here is the experience of one man with this style of furnace:

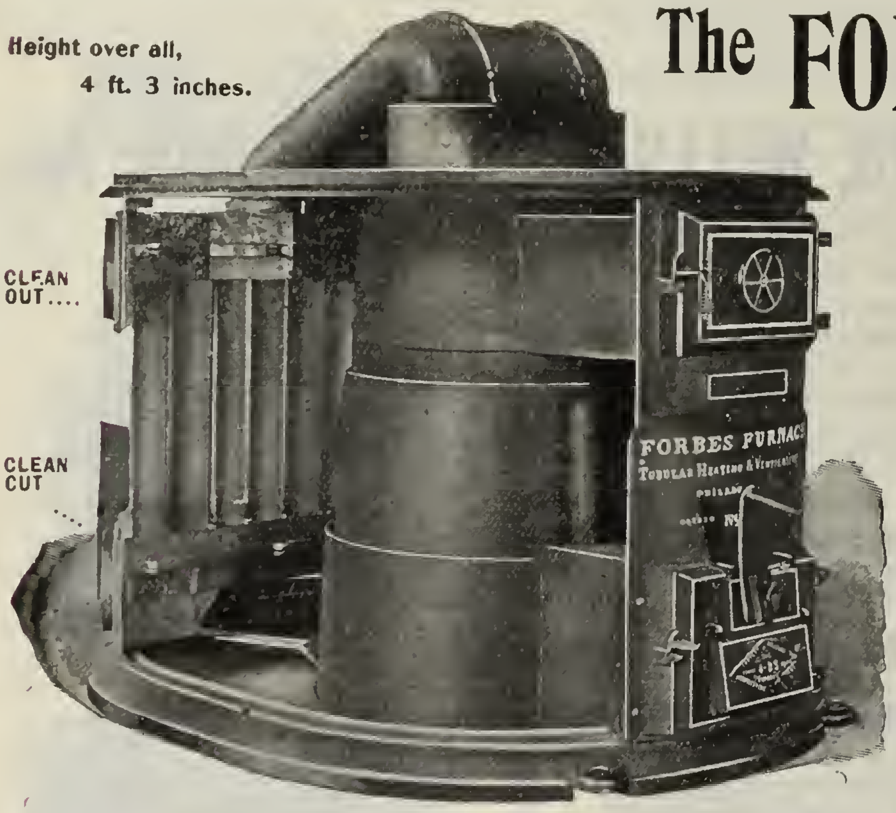
L. J. CLARK, Villas, Pa., says:

"I want to tell you how my furnace acted one winter. Down stairs I heat 3 rooms and pantry and hall, using a gasoline stove for cooking; upstairs, I heat 3 bedrooms, bathroom and hall, and also have one register in attic which was used occasionally, making in all 10 registers I moved into the house on the fourth of November and had fire up to the 5th of May. I bought 8 tons of soft coal at $1.80 per ton, total $14.40. I had about 1¼ tons left over. We had loads of hot water heated in furnace, so that fuel for gasoline stove only cost about $2.10. This looks rather small for expense, but nevertheless it is a fact."

GET OUR
CATALOGUE
AND PRICES.

GIBLIN & CO.,
UTICA, N. Y.

**Height over all,
4 ft. 3 inches.**



The FORBES FURNACE.

You run no risk in putting in the

Forbes Furnace.

- When properly installed we guarantee them in every case.
- They are constructed entirely of cast iron.
- No sheet iron drums.
- Our radiating tubes are ⅛ in. thick, and will wear for years.
- Specially suited for low cellars.

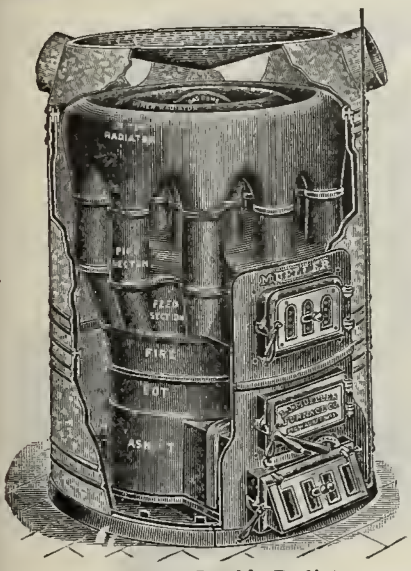
SEND FOR CATALOGUE AND FULL PARTICULARS.

Tubular Heating & Ventilating Co.,
228 Quarry St., Philadelphia, Pa.

WINCHESTER

A steam fitter started business with no capital and 19 books on steam fitting. He would have been better off with one book on steam fitting and a line of "WINCHESTER" steam and water heaters. The latter would make his jobs work if anything could. For sale by Smith & Thayer Co., Boston, Mass.; 105 Beekman St., New York.

HEATER.



All Cast Iron—Double Radiator.

There Are Others

MAKING FURNACES AND BOILERS

But they make none equal

TO THE

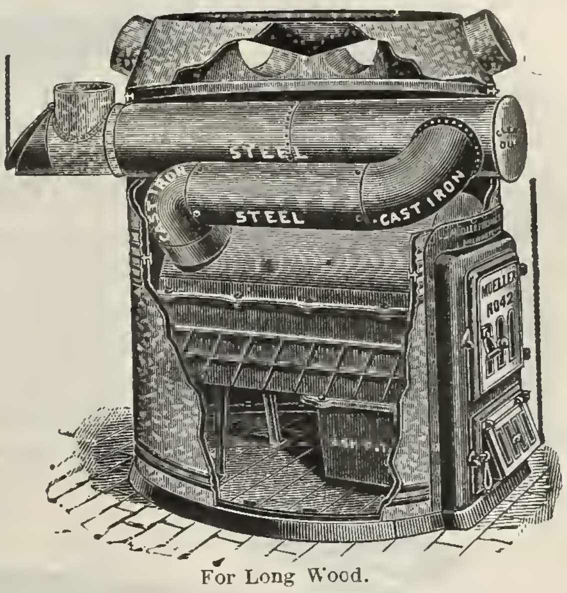
MUELLER

We make Heaters in all styles and for all kinds of fuel . . .

WRITE FOR OUR CATALOGUE AND PRICES.

Everything in the Heating Line.

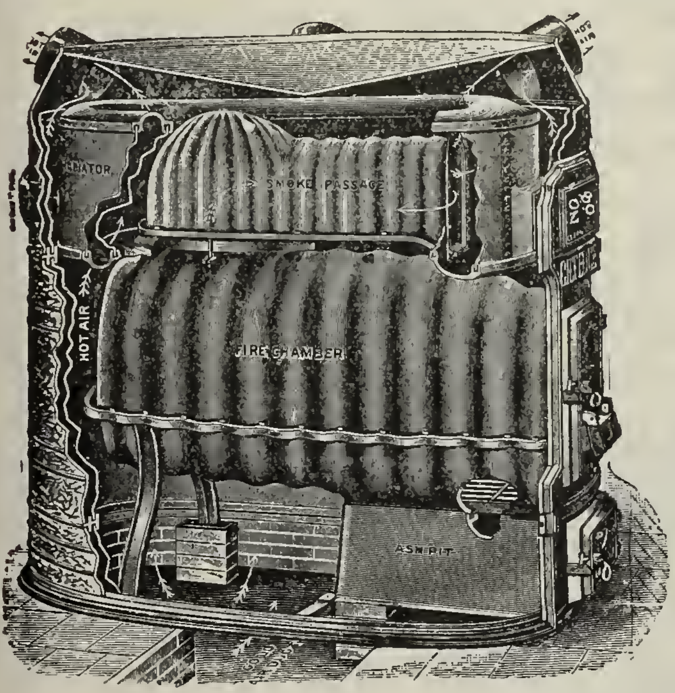
ESTABLISHED 1857



For Long Wood.

190 Reed St. L. J. MUELLER FURNACE CO., Milwaukee, Wis.

GILT EDGE



stands for best when applied to furnaces. The many dealers who have installed and the thousands of householders whose homes have been heated by our furnaces show they like the Gilt Edge, as will be seen by the testimonials they have written. Let us send you a few of them.

The Keystone Joint used in Gilt Edge Furnaces is the only permanent gas tight steel and cast iron joint on the market.

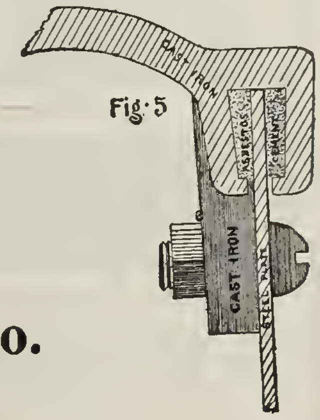
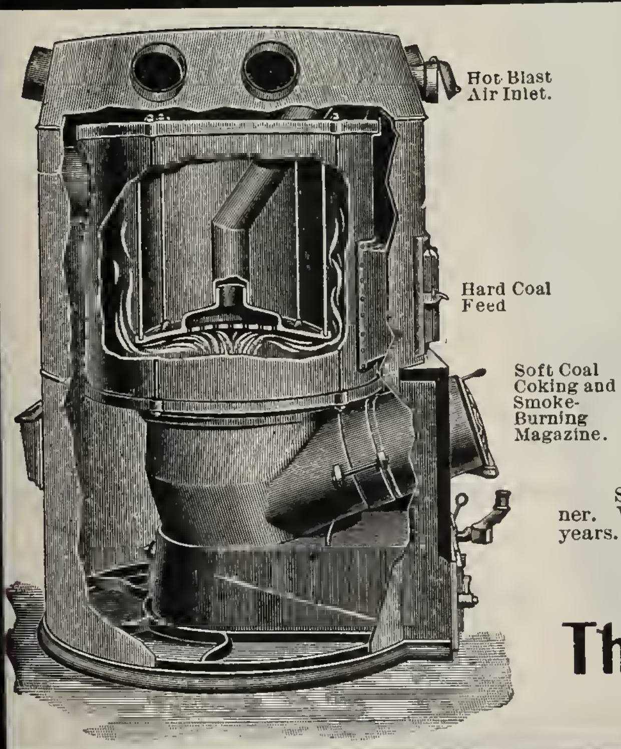


Fig. 5

R. J. Schwab & Sons Co.

MILWAUKEE


Hot Blast Air Inlet.
Hard Coal Feed
Soft Coal Coking and Smoke-Burning Magazine.

THE PATRIC FURNACE

IS A COMBINATION OF

GOOD THINGS

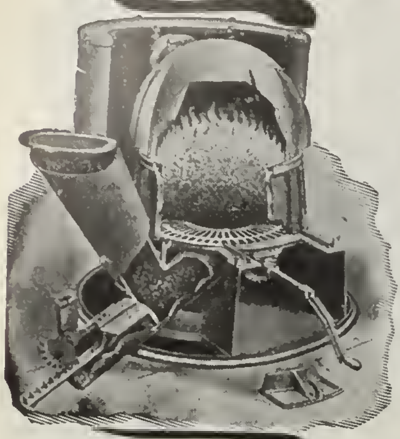
For the Dealer and User.

Scientific and Simple in construction. The Coking and Smoke-Burning is a trade-winner. Very economical. Has an efficient Hot-Blast. Exceedingly durable. A success for 29 years. Easy to sell. Easy to operate. Easy to install.

Let us send you a catalogue that tells you all about it.

The Patric Furnace Company,

SPRINGFIELD, OHIO.



IF YOU ARE NOT SELLING THE

Peck-Williamson Underfeed Furnace

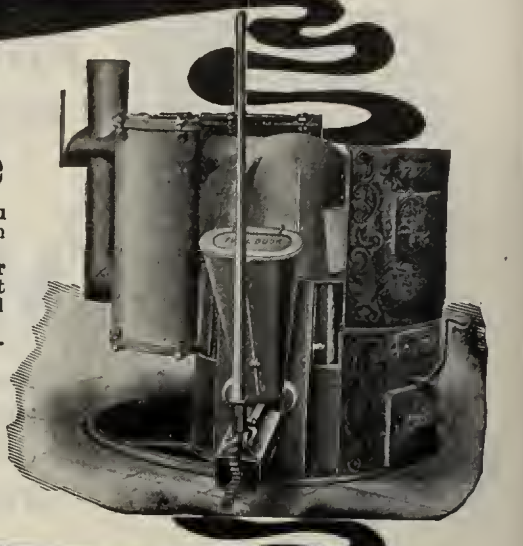
you have not the trade and are not making the money you might. Just a pull or two of the lever feeds the new coal from underneath.

The Underfeed Furnace consumes less fuel than any other furnace ever built. The coal is burnt more slowly. All the heat units from it, as well as from the smoke, are utilized and all smoke eliminated.

Our handsome booklet explains its splendid heating qualities and coal saving.

You may have this booklet and our special plans for selling. Ask for booklet about our Laundry Dryer also.

THE PECK-WILLIAMSON COMPANY,
CINCINNATI, OHIO.



For a swell job

You ought to know our line—many a dealer loses an opportunity to make a good profit because he knows only heating stoves and furnaces.

We can post you concerning steam and hot water heating, so you can get a share of what is due you.

KEWANEE BOILER COMPANY

KEWANEE, ILLINOIS.

Most all Furnaces have some good features; the principal difficulty the consumer generally has is to determine which may be the most durable and economical in fuel.

We guarantee the "DIGHTON," under proper management, to last as long without repairs as any Furnace made.

We, nor anybody else, couldn't make a Furnace to heat a given number of feet of space with any less fuel than the "DIGHTON" would require, even if the cost was five times what we charge for the "DIGHTON."

The "DIGHTON" price is just about one-third less than what you probably pay for some Furnace not one-half as good.

DIGHTON FURNACE CO., Taunton, Mass.

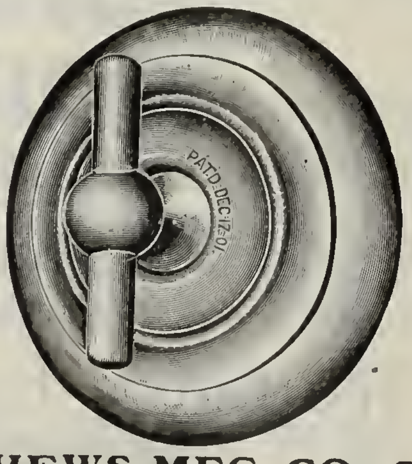
SOMETHING NEW....

Sheet Steel Draft Registers with Screws Complete.

PATENTED DEC. 17, 1901.

Threads are cut and disk is securely fastened
Without cotter pins or washers,
Yet it is loose or tight as wanted.

SEND FOR PRICES.



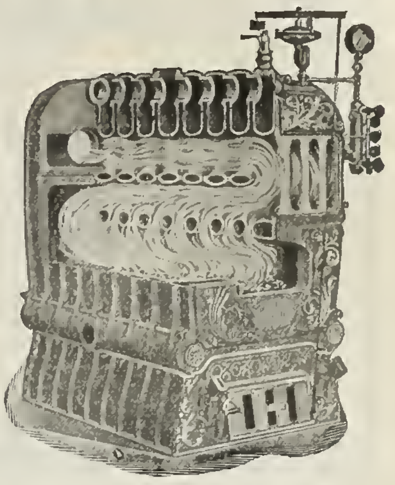
STOCK SIZES.

2½ in.	4 in.
3 in.	4⅛ in.
3¼ in.	4½ in.
3½ in.	5¼ in.
3¾ in.	

Any size made to order in quantities.

Manufactured by **The H. A. MATTHEWS MFG. CO., Seymour, Conn., U. S. A.**

The New WALKER BOILER for Steam: for Water



WALKER BOILER. 20 Series.

THESE boilers have fully justified our anticipations. This view shows our "20 series" made in eight sizes for either

WATER OR STEAM HEATING.

Capacities for WATER 575 to 2150, for STEAM 350 to 1300 square feet direct RADIATION.

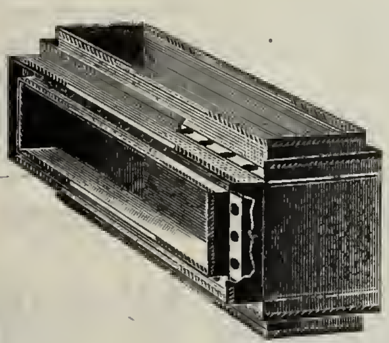
Send for Catalogue No. 31 and look it over, then get particulars. Sold on "Honest Rating Plan."

WALKER & PRATT MFG. CO., - 31-35 Union St., Boston, Mass.

FURNACES

EXCELSIOR HEATING SPECIALTIES

PIPE



WE ARE MAKING

Very Low Prices

on our full line for present and future deliveries and solicit

Your Inquiries

Our Stove Pipe and Elbows, also Furnace Pipe are the Best made.

THE EXCELSIOR PARLOR ELBOW.

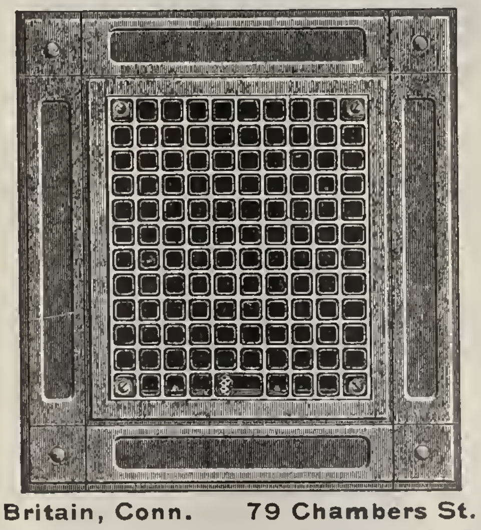
ELBOWS

EXCELSIOR STEEL FURNACE CO.
38-40 W. MONROE ST.—CHICAGO.

REGISTERS

H. & C. WROUGHT STEEL REGISTERS

FURNISHED WITH WROUGHT STEEL or WROUGHT BRASS FACE PLATES, AND IN ALL FINISHES.



STRONG, LIGHT, HANDSOME in SIMPLICITY of DESIGN.

GENERAL SALES AGENTS
STANLEY WORKS
New Britain, Connecticut.

THE HART & COOLEY CO., New Britain, Conn. 79 Chambers St., New York. 19 Lake St., Chicago.

REFRIGERATORS,
BLUE FLAME OIL STOVES,
GASOLINE STOVES.

LARGEST JOBBERS
in
NEW ENGLAND.

GAS RANGES,
FURNACES, STOVES,
RANGES AND REPAIRS.

HENRY N. CLARK CO., 56 and 58 UNION ST., **Boston, Mass.**

ACME

OVEN THERMOMETER

Just What You Have Been Looking For.

A Reliable Thermometer at a Reasonable Price.

Manufactured By

Evans Stamping & Plating Company,
TAUNTON, MASS.

Patented March 11, 1902.

C. H. MATTHEWS, Detroit, Mich.,
WESTERN AGENT.

BRAND STOVE CO.

STOVES, RANGES and FURNACES.
SEND FOR CATALOG.
MILWAUKEE, WIS.

STARTING RINGS For All Kinds of BLUE FLAME STOVES.
Small size, 40c. per doz. Medium size, 55c. per doz.
Large size, 75c. per doz.

In ordering mention diameter of rings and name of stove.

THE S. M. HOWES CO., 40, 42, 44, 46 Union Street, Boston, Mass.

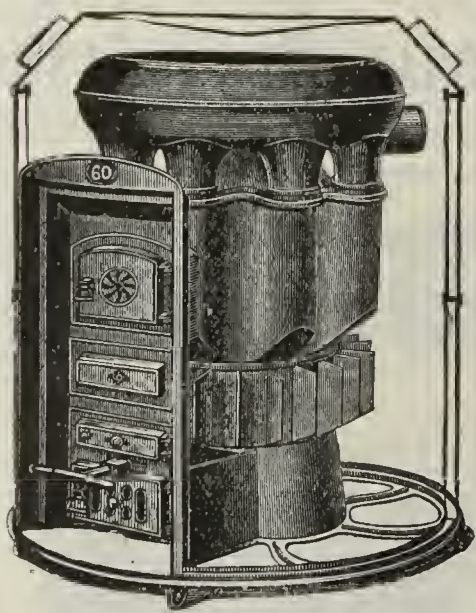
HOT WATER AND HOT AIR

HEATING BY COMBINATION STOVES AND FURNACES.

Suitable for Large or Small Houses, Stores, Conservatories, Barber Shops, Hotels, etc., etc.

Heat Water Quickly.
Circulation is Positive.
No Joints Inside to Leak.

THE NATIONAL PIPE BENDING CO
160 RIVER ST., NEW HAVEN, CONN.



Imitation is Flattery.

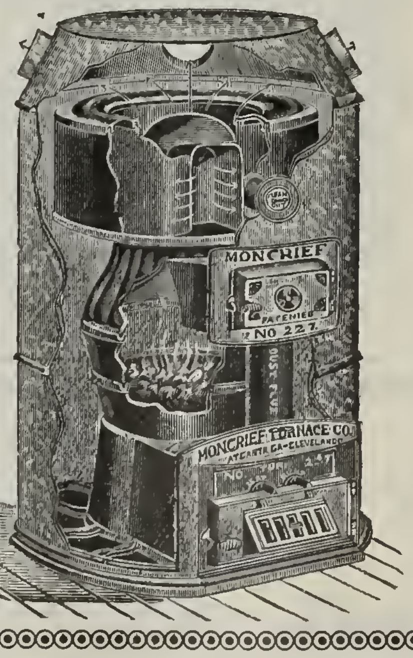
Cory's All Cast FURNACES

HAVE BEEN COPIED BUT NEVER EXCELLED.

An Absolutely Gas Tight Furnace Without Bolted Joints.

UZAL CORY & CO.
210 WATER ST., NEW YORK.

Established 1847.



MONCRIEF FURNACES

PORTABLE and BRICK SET.

Unequalled in the Great Essentials---Simplicity, Durability, Economy, Capacity, Comfort.

NO BETTER MADE.

Write for catalogue. Special price to the trade

MANUFACTURED BY

The MONCRIEF FURNACE & FOUNDRY COMPANY, ATLANTA, GA.

STAMFORD FOUNDRY COMPANY

MAKERS OF

RANGES COOKING AND HEATING STOVES
HOT-AIR AND COMBINATION AIR AND
WATER FURNACES
LAUNDRY STOVES CONFECTIONERS' STOVES
CABOOSE RANGES ETC ETC

STAMFORD CONN

BOSTON GAS COOKER.

Low Priced, But Not Cheap.

OVEN 12 x 17 x 12 INSIDE.

One Extra Large Top Burner. Flush Top, A Perfect Baker.

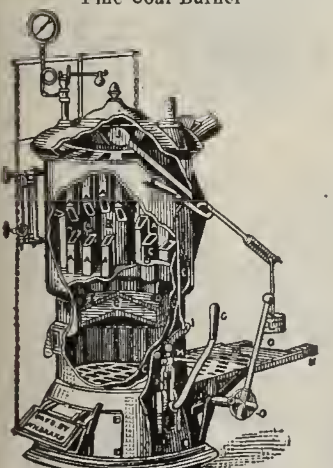
RETAILS FOR $6 and gives the dealer an extra large profit.

SEND FOR PRICE.

MANUFACTURED BY

THE S. M. HOWES CO., 40, 42, 44 and 46 Union St., BOSTON, MASS.

Sectional View of the
—TORRID—
Fine Coal Burner



For Steam or Hot Water Heating.

This boiler is made on an entirely new principle and is

The Only Boiler

that will burn Pea or Buckwheat Coal successfully.

SAVES TIME, SAVES MONEY.
RESULTS UNEQUALED.

Send for Descriptive Cuts.

MANUFACTURED BY

W. H. DRAKE, 36 Clinton St., NEWARK, N.J.
Factory: Hackettstown, N. J.

Furnace Heating.

A Practical and Comprehensive Treatise on Warming Buildings with Hot Air, by William G Snow, with an Appendix on Furnace Fittings. 170 pages; size, 6 x 9 inches. Cloth bound. Price, **$1.50.**

This is the only book that has been brought out which presents a systematic and reliable treatment of the warm air furnace system of heating.

It deals with the various types of furnaces, their construction, proper location and setting, together with furnace fittings, and all matters pertaining to the installation of furnaces and to effective and economical heating by warm air. The subject is discussed for the first time by a competent author possessed of a scientific education and a practical training, who presents positive rules, based on a long experience, for guidance in designing furnace systems for dwellings and other buildings where this popular method is employed. The various details of furnace work are described simply and at such length that the volume will be valuable to all who are in any way interested in the subject. It is recommended to practical furnacemen, to architects, builders and house owners, and to tinners and plumbers in suburban sections who do furnace work. To all these it will prove a reliable text-book and guide.

PARTIAL SUMMARY OF CONTENTS BY CHAPTERS.

Chapter I.—Furnaces—Is devoted to Furnace Construction—The Relative Proportion of Furnace Parts—Secondary Heating Surface—Economy and Efficiency—Heating Capacity and Exposed Wall Surface—Manufacturers' Ratings of Their Own Productions, etc.

Chapter II.—House Heating—Compares Furnaces and other apparatus, and describes Method of Setting Brick and Portable Furnaces—Location and Area of Cold Air Supply—Cold Air Rooms and Air Filters—Return Ducts and Air Circulation—Size of Hot Air Pipes—Location of Registers, etc.

Chapter III.—The Combination System—Discusses Heating Distant Rooms with Radiators—Balancing the System—Location of Water Heater in Furnace—Capacity of Water Heaters—Size of Radiators, etc.

Chapter IV.—Air—Deals with the Necessity of Ventilation—Water Needed to Moisten Air—Expansion of Air—Velocity of Air in Tubes, etc.

Chapter V.—Heating and Ventilation of Buildings—Considers the Size of Furnaces Required—Fresh Air Room and Supply—Air Circulation—Size of Flues—Use of Stack Heaters—Size of Heating Coils in Vent Flues, etc.

Chapter VI.—Heating of Public Buildings, Churches and Stores—Is given to the Size of Furnaces Required—Grate Surface in Ventilated Buildings—Air Supply—Size of Heating and Ventilating Flues—Size of Stack Heater, etc.

Chapter VII.—Fan-Furnace Combination System—Is devoted to Positive Warm Currents from Fan Systems—Location of Fan and Driving Apparatus—How Good Furnaces are Aided by Fans—Types and Efficiency of Fans—Area of Ducts and Flues, etc.

Chapter VIII.—Temperature Control.

Chapter IX.—Estimate and Contract Blanks.

Chapter X.—Value of Fuels. The Proper Size for Furnace Chimneys—with tables.

APPENDIX.

Furnace Fittings.—A section of 45 pages dealing with the Making of Furnace Casings—Metal Cold Air Boxes—Making Furnace Bonnets and Collars—Making Pipe and Elbows—Register Boxes and Stack Shoes, etc.

SENT, POSTPAID, ON RECEIPT OF PRICE, $1.50

DAVID WILLIAMS COMPANY,
PUBLISHERS,
232-238 William St., New York.

Pierce
BOILERS and RADIATORS

for Steam and Water Heating.

Pierce Improved Florida Steam Boiler.

LARGE HEATING CAPACITY.
ECONOMIC IN FUEL CONSUMPTION.

Endorsed by the foremost Architects and Heating Engineers.
Write for New Illustrated Catalogue.

Pierce, Butler & Pierce Mfg. Co.,
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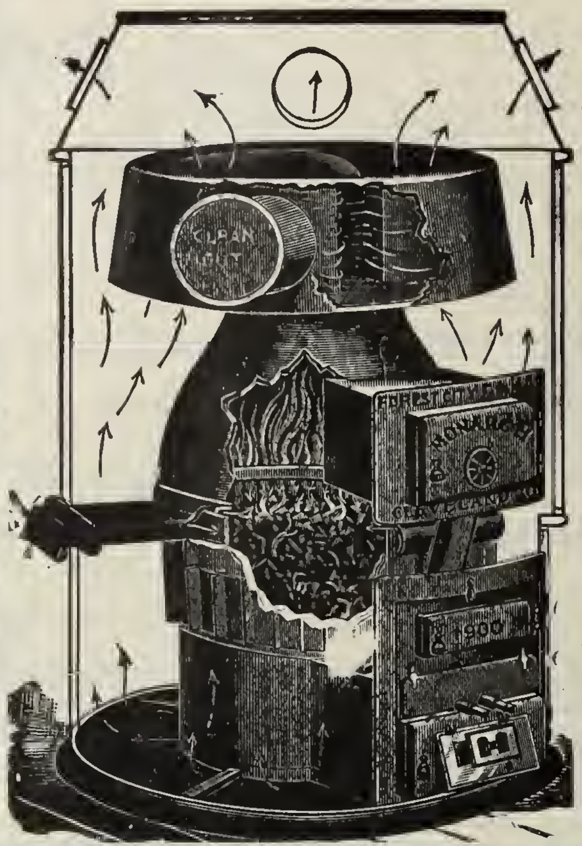

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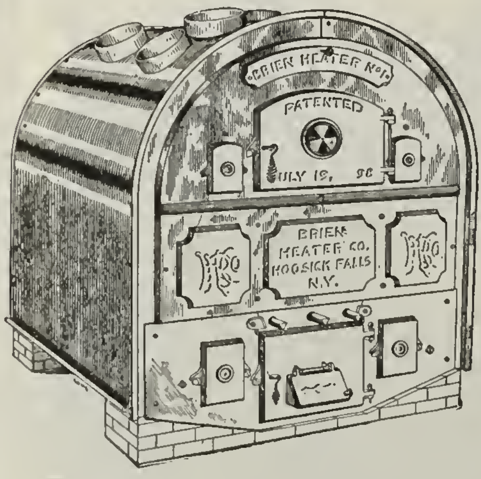

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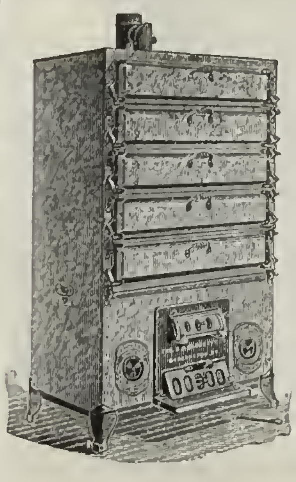

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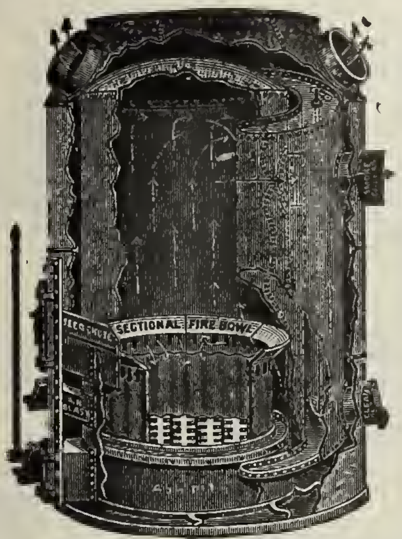

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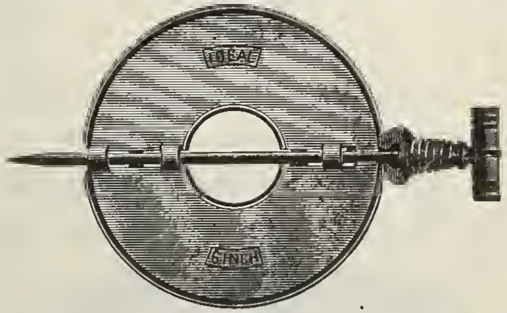

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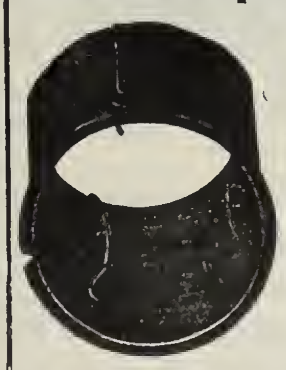

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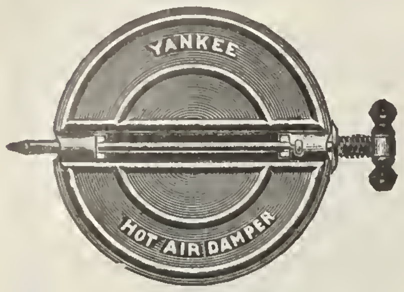

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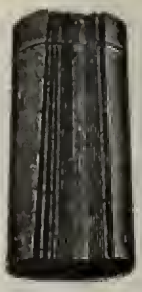

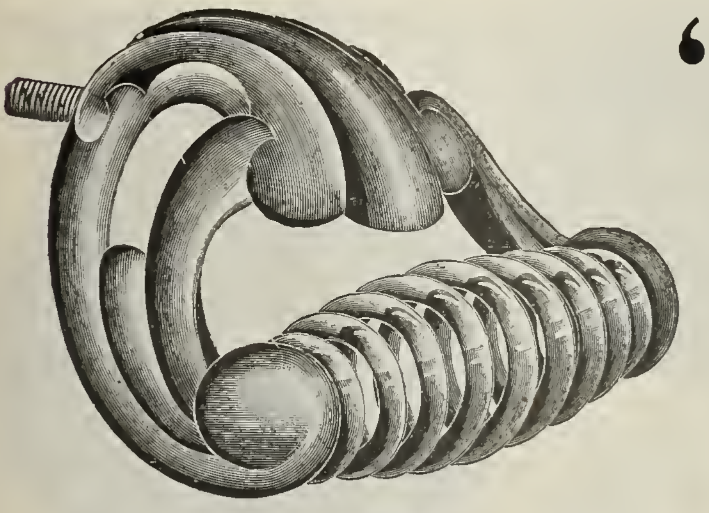

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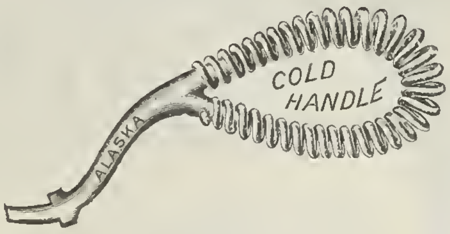

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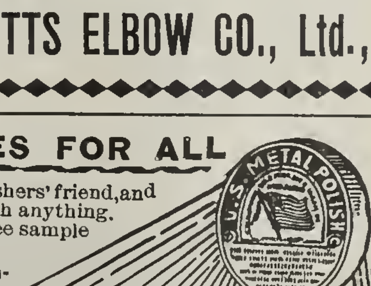

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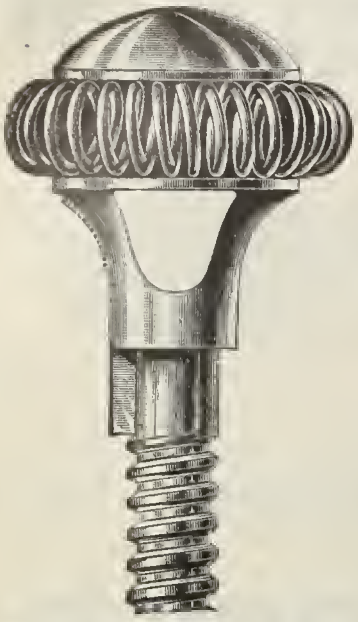

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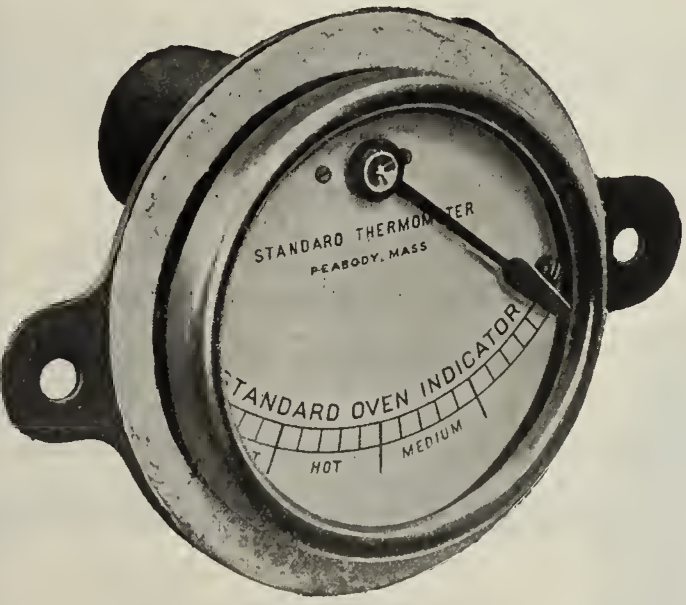

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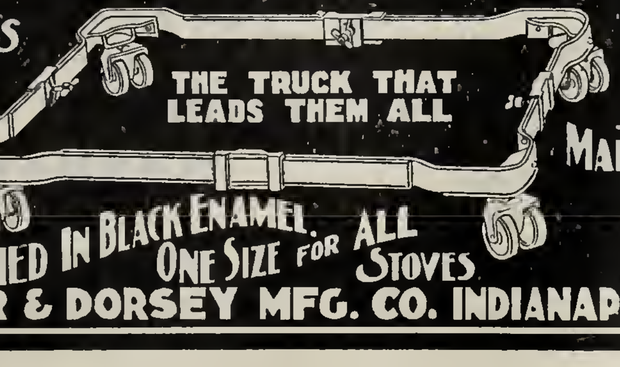
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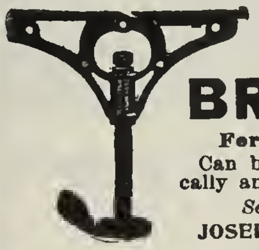

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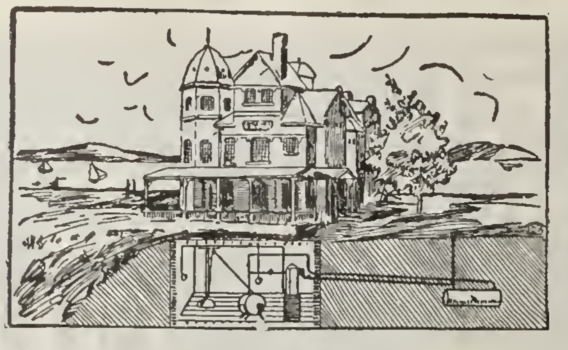

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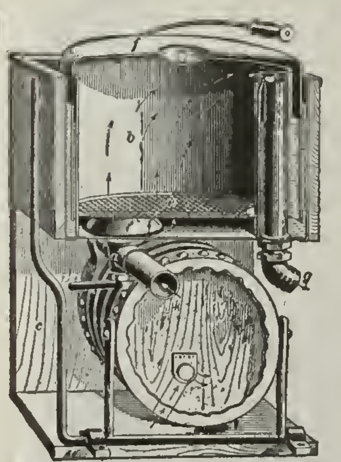

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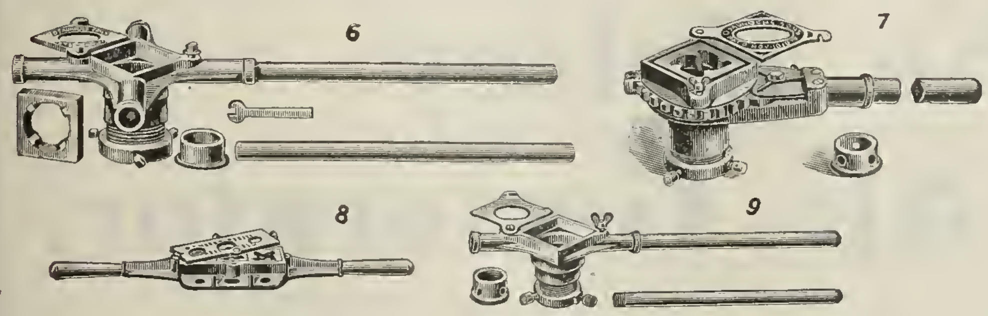

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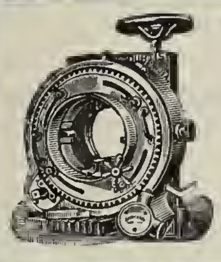

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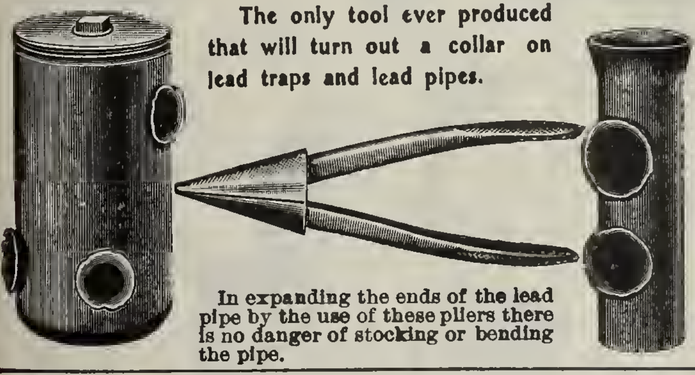

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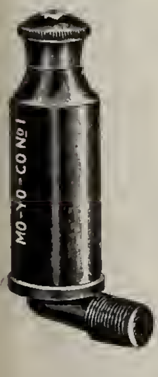

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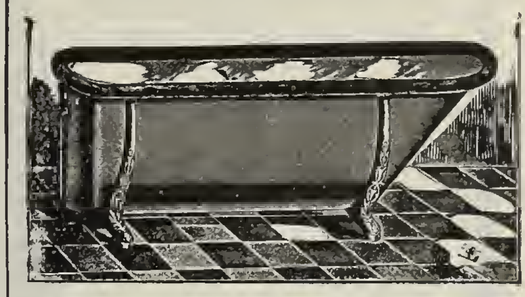

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Satisfactory Conditions in the Heating Trade.

The heating industry has been remarkably free from annoyances for a number of years, and those identified with it are to be congratulated on the harmonious relations which exist between the manufacturers and the contractors. Beyond question this has been largely due to the tactfulness of the officers selected by the associations of manufacturers and contractors. Meetings of both these bodies have been held in Atlantic City this week, and their deliberations have been marked by the same wise conservatism which has characterized their policy in the past, while the reports of their officials and committees indicate that they are in a flourishing condition. The pleasant relations enjoyed in this trade are largely due to the generous spirit in which infringements are treated. The steam fitters have occasionally been called upon to take action where some house, eager to sell, have disposed of goods in a manner inimical to the best interests of the whole trade. In preference to attempting the infliction of a penalty for these violations, efforts have been expended in explaining how such a method of trading is an injustice to the great majority of the trade, and the endeavor has been made to secure an agreement to discontinue such practices. The result has been that the National Association of Steam and Hot Water Fitters has proved very successful and useful to its members.

While the meetings of the manufacturers have been held regularly and for a somewhat different purpose, the benefit to the whole trade has been marked. At their earlier meetings their energies were devoted to the elimination from the trade of many injurious practices, such as long terms, consignment of goods and other concessions which paid a poor return upon the capital invested. For some time past the conservative element in this body have endeavored to preserve a steady market, and it is worthy of note, as a result of this effort, that boilers and radiators have held to practically unchanged prices so far this year, notwithstanding that the prevailing conditions would have justified a change. Iron has advanced in price, wages have been increased and all the supplies which enter into the construction of heating apparatus cost more than formerly. Yet this body of manufacturers have felt that enough benefit would be derived by all from a practical uniformity of price to ultimately equalize the advantages and disadvantages.

The Strike Epidemic.

Labor troubles are increasing in number and importance. The forebodings of those who expected developments of this character are thus being verified. The indications of uneasiness on the part of labor early in the year were regarded as too significant to be misunderstood. Nevertheless, many experienced business men permitted themselves to be deluded by the belief that the strikes of this year would be neither serious nor numerous. They probably reasoned that too many of the recent strikes had resulted unfavorably to labor to warrant any extensive disturbance to occur at this time, or that workingmen were too generally employed at good wages to feel sufficiently discontented to strike in any great number. When the anthracite coal miners' strike was threatened the expressions of the over-sanguine had far more weight with the public than the positive utterances of the leaders of the miners. Hence that strike came as a surprise to the business world generally. It is entering upon its fifth week, with no more hope of an early ending than that based upon an investigation of the causes leading up to the strike by the United States Commissioner of Labor.

We now have troubles with the machinists in several localities, the strike of the puddlers in Eastern Pennsylvania, the stoppage of work by the melters in crucible steel works and, of course, more or less controversy with molders in scattered localities. The strike of the blast furnacemen in Ohio and Western Pennsylvania, although of short duration, was of greater extent than had been anticipated. The teamsters' strike in Chicago, settled last week, was a sudden outbreak which was far more serious in its consequences than could possibly have been foreseen. This week we have the strike of the coal miners in Virginia and West Virginia as an additional cause of uneasiness in manufacturing circles. A street railway strike is in progress in Providence, and a very extensive one in Chicago was last week barely averted. It is to be hoped that all the labor troubles now progressing will be settled before any more develop to distract business interests. The air, however, seems to be charged with portentous indications in this direction, and it would not be surprising if more and more labor troubles should break out before the epidemic has run its course.

Pig Iron Production Temporarily Reduced.

The monthly blast furnace statistics of *The Iron Age* for June 1 reflect the special conditions prevailing in the pig iron industry at the end of last month, through the banking and blowing out of a number of furnaces in the Shenango and Mahoning valleys, owing to the labor troubles in those regions. These troubles, however, were only temporary, and the majority of the furnaces have since resumed. Their suspension, however, in the last days of May was sufficient to make quite a sharp reduction in the active furnace capacity on June 1. The statistics referred to show a total weekly capacity on June 1 of 344,748 tons, as compared with 352,064 tons on May 1. It is probable, however, that the output for the coming month will be fully up to the 1,500,000-ton mark. It reached 1,570,243 tons in May, a month of thirty-one days. The report of furnace stocks of pig iron on June 1 shows a still further reduction to the insignificant amount of 62,616 tons, just about one day's output of the furnaces. Spot iron still continues exceedingly scarce, and higher and higher prices are being paid for it. Steel is also very scarce, and it looks as though this country will have to import for some time to come.

A Word to the Stove Dealer.

While the stove dealer at the present time is doing a particularly satisfactory business in gas and oil stoves, there is substantial basis for the conclusion that he is not neglecting his coal stove business. Those dealers who recognize that the more stoves are sold the greater the profit, while devoting a portion of their sample floors to the gas and oil goods, have been wise enough to make an attractive display of the cooking range or heater which they intend to use for a leader. If a fine piece of goods, which reflects credit on the dealer who makes a selection of it, is kept bright, clean and attractive, not only in all its parts but also in its surroundings, it will, instead of losing its attractiveness by being continually seen, grow upon the prospective purchaser. So, the dealer who expends a little extra care and makes the necessary effort to show either a cooking stove or a parlor heater, in season and out of season, under the most favorable conditions, is sure to secure the lion's share of the trade. It cannot be too strongly urged upon those who handle this class of goods that the stress of the summer weather and the demands made upon them by other branches of their business should not be permitted to cause any relaxation in the effort to push their coal stove business. It is only necessary for the stove dealer to walk through the streets of his own town or city to find that the buyers congregate around those stores which show their goods most attractively, and where the proprietor and his assistants meet all inquirers genially. If he would enjoy similar patronage it will only be necessary for him to adopt similar methods.

Our Export Trade.

Exports of manufactures from the United States show a decided improvement in the record of foreign commerce for the first ten months of the present fiscal year. The report of the Treasury Bureau of Statistics of the exports from the United States during the month of April and during the ten months ending with April 30 shows a marked improvement in the record of manufactured articles exported. This class of exports in the month of April, 1902, were $4,500,000 greater than those of April of the preceding year, being $38,960,000, against $34,416,000, and forming 36.5 per cent. of the total exports in April, 1902, against 29.1 per cent. in April, 1901. For the ten months ending with April the exports of manufactures were $333,820,000, against $339,307,000 for the corresponding months of the preceding fiscal year, a reduction of about $5,500,000 for the ten months. This would indicate that the total exports of manufactures during the full fiscal year, which ends with the present month, will fall little, if any, below those of last year. An examination of the details of the exports shows that the small reduction of $5,500,000 existing on May 1 was due entirely to a falling off of nearly $8,000,000 in the exports of pig iron and steel rails and of $3,000,000 in copper exports. As a matter of fact, the exports of all other classes of manufactured products are well up to the level of the preceding year, and in many cases in excess.

It will often be found a great saving of time and trouble if tradesmen, when sending an order to a house with which they have had no previous transactions, would inclose references with the order. As it is, considerable time is sometimes lost in shipping goods through the fact that the house from which the goods are ordered has either to write back for the necessary references or make inquiries through the commercial agencies as to the standing of their would-be customers. It sometimes happens that a reliable business house is not rated by the agencies, owing to recent organization or a change in the composition of the firm, and valuable time is occasionally lost while the agencies are making the requisite investigations as to the standing of the firm. If goods are needed in a hurry it will be found especially advantageous to send references the first time.

The Production of Coal in 1901.

The United States Geological Survey has prepared a preliminary report upon the production of coal in the United States in 1901, based upon returns representing 97 per cent. of the entire output. These returns show that 292,240,758 short tons of coal were mined in this country during the past year, the value of the output being placed at $348,813,831, as compared with 269,881,827 short tons, worth $306,891,364, mined in 1900. This represents an increase of 8 per cent. in quantity, and of 13.6 per cent. in value. The production of Pennsylvania anthracite showed a phenomenal increase, from 51,221,353 long tons in 1900, to 60,242,560 long tons in 1901, a gain of 17½ per cent. This is the largest percentage of gain made by the anthracite trade in 20 years. The average price for marketing anthracite coal was $2.05 per ton, the highest figure paid since 1888. Of the 27 States producing coal in 1901, all but four—California, Montana, Tennessee and New Mexico—showed increased production.

To Rival Niagara.

Several large water appropriations recently made upon the north fork of Feather River disclose the object of the late purchase of some 13,000 acres of swamp lands in the Big Meadow and Butte Valley basins, in North Plumas County, Cal. It is intended, says an exchange, to convert these basins into great storage reservoirs, and by about 10 miles of canal and tunnel to convey the water to the canyon of Mosquito Creek, where, with a vertical fall of 1600 feet, it will be dropped again into the Feather River. Here, it is reported, will be located the largest electrical transmission plant in the United States, save that of Niagara, and capable of generating upward of 300,000 horse-power. The Big Meadows basin of 11,000 acres will have the greatest capacity of any artificial storage reservoir known. In addition to developing the mining and lumber interests of this mountain region, as well as other industries along the route, this power will be carried to San Francisco—a distance of 175 miles. This project represents a movement in sympathy with the large efforts now being put forth in San Francisco and the interior to obtain new men and new capital for the development of the resources of Northern California.

Natural gas is being put to a new use at Sherryvale, Kan., where it is found in such abundance that its surplusage is employed to give the alarm when help is needed in putting out fires. In the center of the town a deposit has been struck of such force that it has been connected with a pipe, at the end of which is placed a large whistle, such as is usually blown by steam power. The whistle is used in place of a fire alarm bell, as it gives a blast which can be heard for miles round when it goes into action. The force of the natural gas works the apparatus equally as well as steam, and no expense is required for a boiler or fuel to generate the steam power.

Stove Manufacturers' Interests.

The stove manufacturers throughout the country retain pleasant impressions of their visit to New York in attendance at the national convention. There can be no doubt that all present at that meeting were benefited by the interchange of ideas, and even though on their return home many things occupied their attention, they have not yet become so engrossed in the details of their business as to have lost the new enthusiasm which was acquired at their annual meeting. They, doubtless, are in a position to take a broader view of the conditions which confront them, and are prepared aggressively to take hold of new methods for increasing the output of stoves. To be better able to accomplish this result a full acquaintance with the influences that tend to reduce the sale of stoves must be understood.

CONSOLIDATION.

The discussion of the different consolidation schemes has been beneficial in one respect, if in no other, and that is in making every stove manufacturer realize more nearly the true value of his location, permanent plant, its equipment, the availability of his various patterns and the popularity of his productions. He has doubtless also a better conception of the necessity of careful, systematic accounting and business methods, or an incentive has been given to become as thoroughly informed on these topics as some of those who suggested that these matters would have to be adjusted before consolidation could be perfected. With the busy season advancing ample opportunity is afforded for the closer scrutiny of cause and effect as bearing on the requirements of a successful stove manufacturing business. That consolidation was not accomplished was not due to the lack of favorable consideration, as stanch support was given it, and that further action has been postponed until November does not mean that interest in it has ceased, but that, like all great undertakings, time is one of the essential elements to its accomplishment. Hence the matter is to be regarded as simply in abeyance. The persistence with which consolidation is kept in view, despite severe criticism and the apparent impossibility of effecting such a combination of interests as will satisfactorily meet trade conditions in important stove consuming centers, is causing the movement to be regarded with much more respect than in previous years. Although the trade at large are of the opinion that no consolidation of stove manufacturing establishments can be effected that will include any considerable number of the large companies, yet the standing of the men who are pushing the latest scheme is so high in every respect that their efforts cannot be wholly ignored.

THE OUTLOOK.

Reports from all sources indicate that the sale of stoves this year will compare very favorably with the number which each manufacturer hopes to reach. Order books have already been well filled, and the trade generally seem to be reconciled to the advances which have been made and which must be made to bring in a satisfactory return for the investment and enterprise. Notwithstanding this pleasing immediate outlook, a further examination into conditions will show that there are other things which stove manufacturers must take into account when a period of years is to be considered. One of the immediate disturbing features that may or may not affect extensively the sales of the year is the coal strike, and another is the approach of the hot season. These two things conspire to induce many who have heretofore hesitated about the purchase of gas or oil cooking apparatus with which to equip their kitchens. Should the public change from the coal range to the gas range to any considerable extent both the coal range manufacturer and the stove dealer will feel the effect. It may be pointed out, however, that the tonnage of the castings of this branch of industry will be but slightly affected, although there will be a change in the amount of metal melted, pleasing to the gas range manufacturers. Another development that must surely in time make inroads upon the production of stove foundries is the number of small towns in which the exhaust steam from electric lighting stations is being used in street mains for heating buildings. Wherever a building is heated by means of radiators it cuts out the use of the hot air furnace or several heating stoves. These conditions have been gradually coming along, and while the more enterprising stove manufacturer has not had his output especially affected by them, it is due to his greater carefulness, more pleasing and attractive goods, and the fact that he has kept up his sales by winning customers from his less wide awake competitors.

NEW SELLING METHODS.

To repine over disagreeable conditions would be a waste of time, and to maintain the output and take care of the increased capacity of manufacturers only needs the adoption of some new methods. The stove manufacturer must realize that very few dealers have sufficient stove trade to occupy their entire time throughout the year; that the sale of stoves is practically over in the short space of three months, so far as the rush business is concerned; that it extends somewhat further in a desultory way is true, but not to such an extent as to maintain the establishment without the more active attention of the proprietor to plumbing, sheet metal work, or to some other lines of business which make drafts upon his enterprise and energy. Under such conditions the stove making industry must suffer if the exploiting of new fields or the maintenance of sales is left entirely to the stove dealer. Some stove houses do a great deal of advertising, and much of the time of their salesmen, who are especially selected for the purpose, is devoted to refreshing the memory of the stove dealer as to what must be done to secure his full share of the stove trade in his territory and giving him new ideas for increasing his sales. A more concerted effort on the part of stove manufacturers to the same end is necessary for the best interests of the industry. Local stove dealers must be induced to utilize the methods of manufacturers who have made inroads in their territory, selling direct to consumers. In many kitchens of every section of the country the cooking apparatus is dilapidated beyond what the man of the house would tolerate if he had to use it, and the methods of the steel range peddler can be followed with advantage by bringing to the attention of the family a stove suitable to their requirements. Stove dealers in many instances are not qualified to plan such a campaign for extending sales, and many who could do it will hesitate about such a step unless urged to take it, and explanations must be made which will enable them to see the profits that are likely to follow it. Others must be provided with instructions to qualify them for such work and aid them in carrying it out. There is still beyond the reach of the gas companies much territory where coal and wood stoves will be used for years to come, and to increase the sales in such territory and to hold the sales up to the old standard in the older territory will need consideration by the stove manufacturers to develop some plan for a concerted effort to aid the stove dealers in cultivating their fields of operation more thoroughly and to get all out of them that can be had. The gas companies in many large cities not only advertise freely in the daily papers, but circularize the town, have very attractive showrooms, give gas cooking exhibitions, in order to draw citizens to investigate them, and send out on clear days a horse equipped with bells and hitched to a suitable display wagon, on which one of their most attractive gas ranges is displayed. The gas companies in laboring to increase the sale of their product are at the same time doing efficient service for the manufacturer of gas ranges. Stove manufacturers could, with advantage, take up the exploiting of their new productions in a similarly effective way.

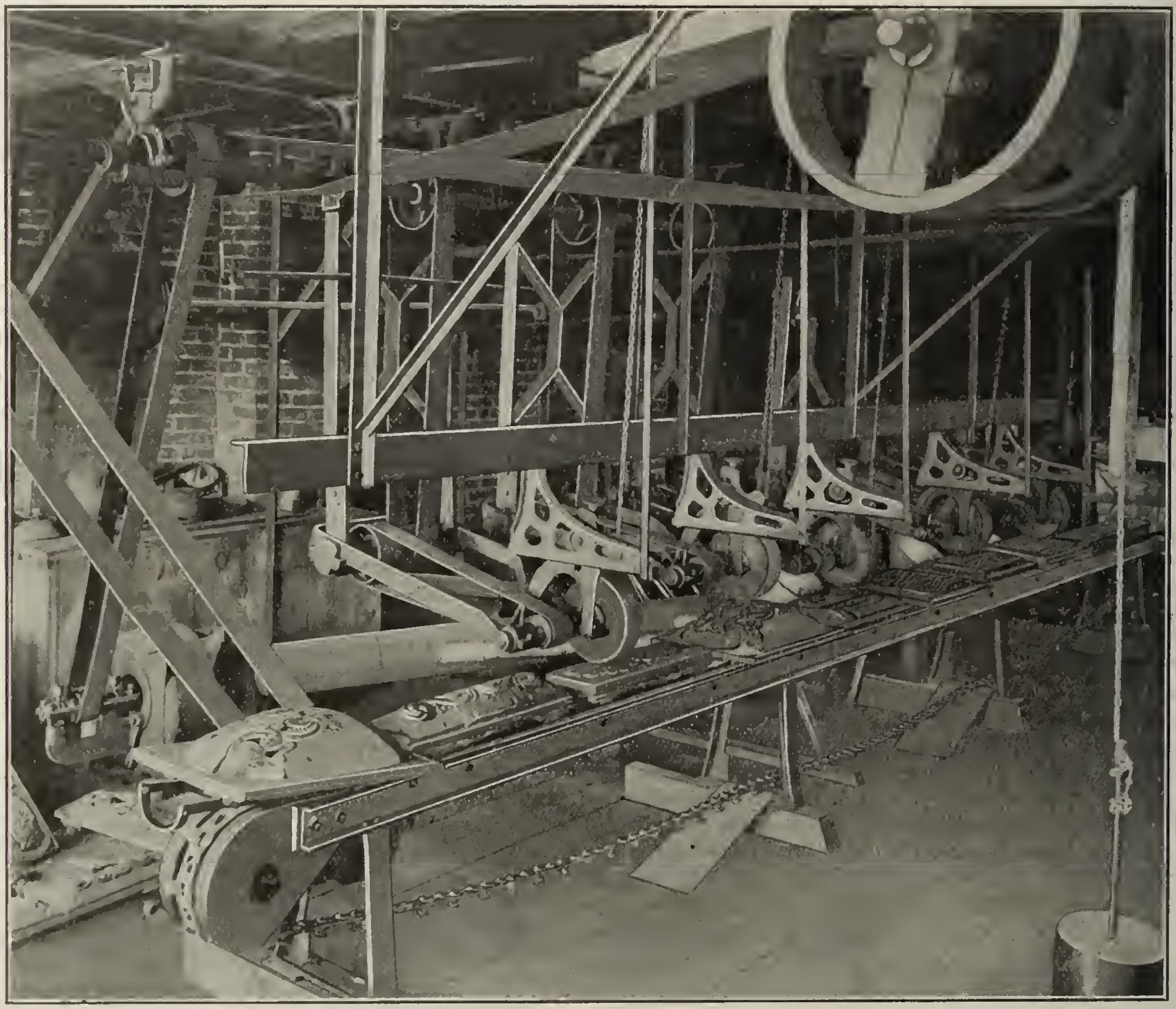
* * *

W. H. Colebrook Sons & Co., Syracuse, N. Y., announce a special offer in the shape of a miniature Swiss clock, handsomely carved and finished in walnut color, which they will give with every gross of their No. 15 Black Flag Stove Polish at $9 per gross. The clock is 5 x 7½ inches in size, and will run 20 hours with one winding.

The Robinson Automatic Polishing Machine.

The Art Stove Company of Detroit, Mich., have introduced an automatic polishing machine designed by W. V. Robinson, the superintendent of the works. The machine, as shown in the engraving, consists of a track about 22 feet long, placed about 3 feet above the floor. Along the center of the track runs an endless chain which travels the length of the table in about 7 minutes. Along this track, and gripping the chain as a cable car grips its cable, are work holders so designed as to hold the casting to be polished.

As the casting is moved along the track it is operated upon by five wheels, representing the successive processes used in polishing by hand. At the present time there are three roughing and two finishing wheels employed. At the end of the track the work holder runs up an incline, is released from the chain, and carried back to the starting point for a second trip.



The Robinson Automatic Polishing Machine.

The wheels which do the work are carried by arms connected with an eccentric which gives them a forward and backward motion at right angles with the track. The wheels are driven by belts from an overhead shaft receiving power from an electric motor. This arrangement is clearly brought out in the engraving. The movement imparted by the eccentric can be regulated to suit the size of the casting operated upon.

Above each of the arms is a counterbalance by means of which the pressure of the wheel can be regulated.

As stated above, there are now five wheels, but the machine will be extended so as to carry two more in the form of oilers or finishers. This part of the work is now being done in the old way, but with the additional wheels all the work will be done by the machine, except perhaps the finishing off of the edges on peculiarly shaped castings.

St. Clair Ranges and Cook Stoves.

Some folders issued by the Belleville Stove Works, Belleville, Ill., illustrate and describe the St. Clair steel range and the Splendid St. Clair steel cook stove, both of which are offered in the usual modifications. The range is made of malleable iron and steel, with extra heavy fire box fitted with duplex combination coal and wood grate. The oven is of cold rolled soft steel, and the oven bottom is so braced as to prevent buckling or warping. The oven plates are riveted to malleable iron frames, both in front and rear of oven, thus making an air tight construction, which is referred to as being always clean and free from dust. The oven doors are malleable, strongly hinged, and line flush with the bottom of oven when open, and supported by malleable braces. The flues are lined with heavy asbestos board. The top oven plate is lined with asbestos, over which is an iron grating that hugs the plate at all points and prevents the asbestos from blistering and burning off. The St. Clair steel cook is also a new construction of good proportions and attractive ornamentation. The body is made of planished steel, and the interior oven parts of cold rolled steel. It is fitted with balanced oven door, large ash pan, cut centers, duplex grate and heavy linings.

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ACCORDING to the decision made by the directors of the Pittsburgh Stove & Range Company at their recent meeting the company's plants at Monongahela City and Sharpsburg, Pa., will shortly be sold in pursuance of the policy to concentrate their manufacturing at one point, which will be at the large new plant at Beaver Falls, Pa., which is now under construction. It is likely that the Allegheny plants and those located at other points will also be abandoned in the near future. The company now employ about 800 men in their various works.

CORRECT BASIS OF ESTIMATE FOR FURNACE WORK.

BY R. S. T.

In my short experience in fitting houses for hot air heating and in going over houses which had been fitted by other concerns which have failed, I have become very strongly impressed with the idea that the common plan of making an estimate based on the cubical capacity of the house to be heated is thoroughly unscientific and totally unreliable. It is unscientific, because the demand for heat depends upon the exposed area. A house of a given exposed area will require to maintain at a given temperature the same amount of heat no matter what its cubical capacity. A square house will have the largest amount of cubical capacity in proportion to exposed area, but a house which has the same area, but on account of its rambling character, has only half the capacity, would require just as much heat as the square house of the larger capacity.

The larger capacity will, of course, require a longer time in which to bring the temperature up to the required point, if the house is cold, as a larger volume of air will have to be poured into the house. But, the house once heated, the heat escapes only through the exposed area. We have, therefore, adopted in our business the rule of calculating the exposed area instead of the cubical capacity. In the case of ordinary dwelling houses we pay no attention to the glass surface for they average about the same. In the case of stores with glass fronts, or churches with large decorative windows, we make the usual allowance for the additional glass surface. If there is a skylight, we make additional allowance for the skylight above what we would for the same amount of glass surface in a side wall.

Our standing rule for ordinary houses is 1 square inch of air admission to the furnace for every 10 square feet of exposed area in the house. In the estimate we estimate all the outside walls and the flat surface of the roof. Where a house has an attic over it which is not heated, but wihch is shut off completely from the house by doors at the top or foot of the attic stairs, we can do with less heat than where there is no attic. But if there is an attic with an open stairway well, we have to count in the exposed area and all the additional area of the attic. So far in our experience this rule has worked well when combined with a little common sense.

We have not found that any rule will remove the necessity for the exercise of common sense. If we find that a house is poorly constructed, with very thin walls and the thinnest possible coat of plastering which you can almost see through, we know that the usual rules will not hold good, and there must be an extra allowance of heat to make up for the lack of protection in the walls. In stores with large double front doors and an active trade, common sense teaches us that every time the front door is opened a large amount of hot air will escape and an equal amount of cold air be admitted. In such cases we have to give an extra supply of hot air to make up for the waste from this source.

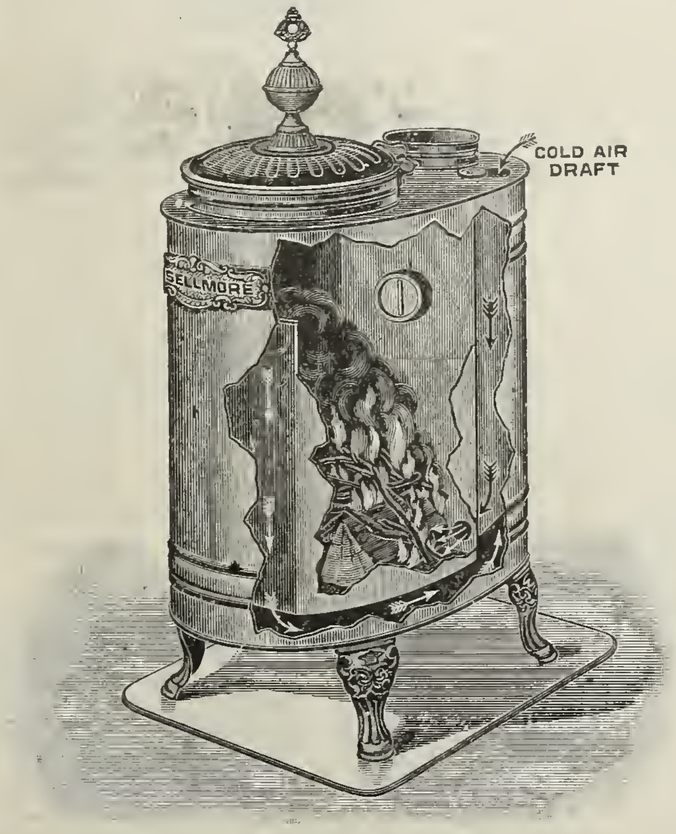
I hope that these suggestions may be of some assistance in securing more scientific treatment of the matter of heating by hot air.

The Logan Stove Pipe Thimble.

The Logan Mfg. Company, Ottumwa, Iowa, are offering a stove pipe thimble which is double a part of its length. The outer shell tapers, while the inner or shorter shell is of the same diameter throughout. The two shells are fastened together at the smallest end of the thimble, thus leaving an opening between the shells for the stove pipe to enter. Among the advantages claimed by the manufacturers are the following: That the pipe needs no wiring, that the pipe cannot be pushed too far in the flue, that it prevents smoking the wall or wall paper, that soot cannot blow into the room, that the pipe will not come out of the flue, that creosote or water cannot run down the wall, that there is no trouble from the draft passing into the chimney around the outside of the smoke pipe, and that a perfect draft through the stove is thus assured.

The Sellmore Air Tight Wood Heater.

What is said to be a radical departure in the construction of air tight wood heaters is incorporated in the Sellmore, now being manufactured by Hemp & Co. of St. Louis, Mo. A broken view of this wood heater is presented herewith, the course of the air currents and products of combustion being clearly indicated. The stove is said to possess all the principles and good features of a down draft, hot blast, base heating air tight, and is so constructed that every square inch forms a radiating surface. The draft regulators are ornamental sliding plates connected with air shafts through which the cold air is forced into the stove. An open damper gives an ordinary air tight stove with direct draft up the chimney, while with a closed damper the course of the products of combustion is toward the front of the stove over the partition, as shown in the illustration, then down along the bottom of the stove, from whence they ascend to the smoke pipe, and escape to the chimney. Norvell-Shapleigh Hardware Company, St. Louis, are the selling agents for this heater.



The Sellmore Air Tight Wood Heater.

The Richmond Company Incorporated.

The Richmond Company is the name of the corporation just chartered at Norwich, Conn., with an authorized capital of $500,000, who have purchased the entire business, including patterns, machinery, tools, trademarks, good will, &c., of the Richmond Stove Company of that place, and will continue the manufacture of stoves, ranges, steam and hot water boilers, &c., under the name of Richmond, as heretofore. We understand that the expanding business of the old company required more capital than could be provided under their old charter, and it was therefore deemed expedient and necessary to organize a new company with a larger authorized capital to take over and carry on the business.

The officers of the Richmond Company are: President, W. S. McMullen; vice-president, William N. Blackstone; secretary and treasurer, F. S. Haywood. The directors of the company are: William N. Blackstone, A. K. Chase, William B. Young, Charles Bard, Frances J. Leavens, Frank A. Mitchell and W. S. McMullen.

From the above it will be seen that the same directors and officers of the old Richmond Stove Company will have in charge the management of the affairs of the new concern. The statement is made that during the past four years the business of the old company was more than doubled, and the volume is increasing to such an extent that a large addition to the works has been found necessary.

The company have just completed an addition to their foundry, 103 x 70 feet in size, and have in process of construction a new foundry building, 150 x 150 feet; also a warehouse of the same dimensions.

ODD PLATES.

The Eclipse Stove Company, Mansfield, Ohio, are favoring their friends in the trade with a poster calendar covering the remaining months of the year. The sheets, of which there is one for each month, are bound at the top with a metal strip and provided with a metal eye for hanging the calendar upon the wall or wherever may be most convenient. The upper half of each sheet is devoted to illustrations of some of the company's specialties in the way of Ranges and Heaters, these being accompanied by brief descriptive text. Prominent among the goods shown is a new line of Cook Stoves and Ranges offered under the name of Victory Eclipse, the Triumph Eclipse Steel Range, the Lustrous Eclipse, a new hard coal Base Burner and Double Heater, the Astral Eclipse, a new Steel Cook, and the Premier Eclipse, a six-hole Range with square oven. The lower section of each sheet is devoted to the calendar proper, which, in addition to giving the days of the week and month, also indicates the various phases of the moon.

William C. Williams, North Lawrence, N. Y., is the inventor and patentee of an adjustable Stove Pipe Fastener and Asbestos Flue Stop, which he claims to be a remarkably efficient and at the same time economical device. Mr. Williams is seeking a manufacturer to produce this device for him.

A dispatch from Norfolk, Va., states that the Board of Trade of that city are corresponding with a Stove company of Albany, N. Y., who propose to establish a foundry in Norfolk. The company, it is stated, contemplate the investment of $300,000 in the enterprise, $200,000 of which amount is to be subscribed by local capitalists. Ten acres of land with water and rail facilities are required.

The death of Walton C. Waterbury, which occurred at his home at La Grange, Ill., on May 29, removes from the Chicago iron trade one of its most esteemed members. He was 44 years old, and was born in Lapeer, Mich. He was connected with Rogers, Brown & Merwin of Chicago as pig iron salesman. In 1892 he took a position as salesman with Forster, Backman & Hayes, the firm subsequently becoming Forster, Waterbury & Co. in 1900 ill health caused Mr. Waterbury to retire from active participation in business. He was well known to the Stove manufacturers throughout the West and was highly esteemed by them.

Charles C. Heath & Co. are sending out from their Philadelphia branch two mottoes intended for the careful consideration of dealers generally. One of these is "The store man or woman that succeeds nowadays always grows from the rough handling of criticism of competitors, not from the fatal germ of praise of same." The second motto is to the effect that "Money is made on turn overs and lost on left overs."

The disastrous flood which occurred at Joliet, Ill., in the first part of the month resulted in the loss of several lives and extensive damage to property. Among the sufferers were the Joliet Stove Works, the damage to whose plant aggregated some thousands of dollars.

The Peck-Williamson Heating & Ventilating Company of Cincinnati, Ohio, have begun work on a factory building at Wellston, Ohio. A bonus of $8000 and a 5-acre site are offered at Wellston. The goods of the company will be made and mounted there, but their general offices continue in Cincinnati.

The Chattanooga Stove Works, Chattanooga, Tenn., are about to erect a two-story brick structure on Catherine street, between Sydney and Whiteside, which will be used for storage and warehouse purposes.

The Mountain City Stove & Mfg. Company, Chattanooga, Tenn., have found it necessary to increase their facilities, and they are about to erect a two-story structure, which will be used for warehouse purposes.

The March-Brownback Stove Company, Pottstown, Pa., in order to meet the growing demands of their business have decided to enlarge their foundry and molding room. It is stated that one of the buildings belonging to the Linfield plant will be taken in sections to Pottstown and added to the present molding room. The annex will be 50 x 80 feet in area.

The Excelsior Steel Furnace Company, 38 and 40 West Monroe street, Chicago, Ill., have recently placed on the market some new goods in the shape of Elbows and Stove Pipe, offered under the name Excelsior. The Stove Pipe is made of galvanized iron, and can be nested so as to occupy comparatively little space in the shop. The company state that this is the only Galvanized Iron Nested Pipe on the market, and that its merits are such that "there will be no inducement for the manufacture of hand made Pipe." The catalogue which the company have issued shows their various specialties, including Excelsior Steel Furnaces.

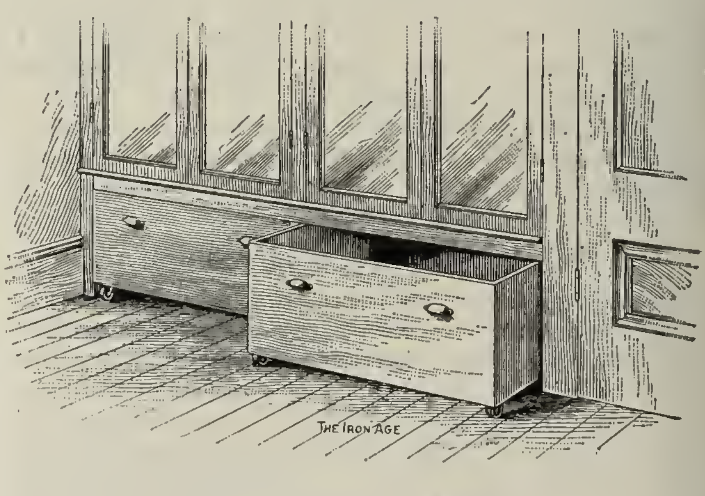
H. Adler Company, 241 First avenue, Pittsburgh, Pa., are keeping the merits of their Acme Gas Ranges constantly before the trade by means of blotters which they are extensively distributing. The face of the blotter carries the descriptive text under the title "Pressure," of which it is pointed out there is more than one kind. This, they state, was kept in mind in designing the Acme Gas Ranges, with the result that the Range is said to operate equally well under the highest or lowest pressure. With regard to pressure as applied to business, they state that they are well occupied in most departments, but Acme Gas Ranges being new, they are in a position to absorb a few more orders for them. They make distinct types of Stoves for both gases, with separate flue for each burner to carry away disagreeable fumes, adjustable air mixers, asbestos lined oven, flush top and first-class workmanship. The top and bottom oven plates are made of cast iron. The company suggest that dealers interested in goods of this character send for their catalogue No. 35, which shows an extensive assortment.

Ayling Brothers, Chicago, manufacturers of Stove Polish, announce that samples of their new manufacture will be sent free to Stove dealers and manufacturers upon application. The Polish is a prepared powder and has been patented both in the United States and Canada.

The Michigan Stove Company, Detroit, Mich., have issued a small sized desk calendar very attractive in appearance and containing the last six months of this year and the first six of next. The trade-mark of the Garland Stoves and Ranges occupies a conspicuous place on the card.

Drawers Under Show Windows

A rather unusual feature in store arrangement is seen in the store of Jordan Bros., Willimantic, Conn., in which the space under the show window platforms is utilized to good advantage. This is done by means of drawers about 5 feet long, which is the depth of the window, mounted on rollers, so that they can be easily pulled out and pushed back into place again. The arrangement is clearly shown in the accompanying illustration.



Drawers Under Show Windows.

NEBRASKA RETAIL HARDWARE DEALERS' ASSOCIATION.

Another very promising State association has been formed in Nebraska, the organization meeting taking place in Hastings on the 3d inst.

A few weeks ago the hardware merchants of Hastings and Holstein decided there was need of a retail association. Alexander F. Meyer of Hastings was chosen secretary of the movement, and the other dealers agreed to share the expense of ascertaining the sentiment in the trade. Mr. Meyer visited several towns and wrote many letters. So much encouragement was extended that a meeting was called at Hastings on June 3. In the meantime correspondence took place with the National Retail Hardware Dealers' Association, and they were invited to send a representative. They responded to the call and were represented at the meeting by their secretary, M. L. Corey, who was present throughout and who materially assisted in making the meeting interesting and successful.

Mr. Meyer called the assembled merchants to order, and after stating the object of the meeting, C. K. Lawson of Hastings was chosen temporary chairman, and Mr. Meyer temporary secretary. The question of forming a State association was then submitted to the gathering, and every dealer present expressed himself as favorable to the project. The following committees were appointed, to report at the afternoon session:

CONSTITUTION AND BY-LAWS: C. D. Morton, Omaha; G. E. Isamon, Hastings; Kimel Barnes, David City; J. C. Cornell, Ord; J. B. Hunter, Aurora.

RESOLUTIONS: H. Heuke, Grand Island; Thos. Nelson, Diller; Fred. Binderup, Hastings; Theodore Lindholm, Omaha.

NOMINATIONS: J. A. Peterson, Oakland; A. E. Small, Minden; W. E. Jakeway, Kearney.

TEMPORARY EXECUTIVE COMMITTEE: Alexander F. Meyer, Hastings; Theodore Lindholm, Omaha; W. E. Jakeway, Kearney.

In the afternoon session constitution and by-laws were unanimously adopted, as well as the following resolutions:

Resolved, That every member present shall use every effort to enroll every legitimate Hardware dealer in the State so as to make our association a success.

Resolved, That the thanks of this association are hereby tendered to the Hardware dealers of Hastings and Holstein for the able manner in which they worked to make this meeting a success; especially to Alex. F. Meyer, to whom much of the credit for this organization is due.

Resolved, That the Nebraska Hardware dealers are opposed to the Parcels Post bill, and will use every honorable means to defeat this meature.

Resolved, That we recognize and appreciate the interest shown by the National Hardware Dealers' Association in sending their secretary to assist us in organizing—that Mr. Corey has contributed very much to the success and interest of this meeting and we hereby extend our thanks by a rising vote.

The following officers were elected:

T. W. MORTON, Omaha, president.
C. K. LAWSON, Hastings, first vice-president.
W. T. COLEMAN, McCook, second vice-president.
J. C. CORNELL, Ord, third vice-president.
HARRY HALL, Lincoln, secretary and treasurer.

The next meeting will be held at Lincoln. The advisability of holding a midsummer session in August is being considered by the Executive Committee, many of the members of the association strongly favoring the idea.

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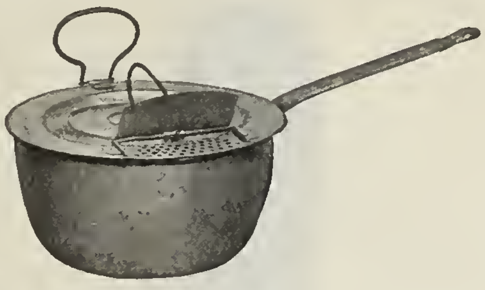
TUCKER & DORSEY MFG. COMPANY, Indianapolis, Ind., manufacturers of Hardware and Wooden Ware Specialties, for whom John H. Graham & Co., 113 Chambers street, New York, are selling agents, issue an illustrated catalogue of their products. An important and diversified line is a series of Alarm Tills, or Money Drawers, of which several have new features. Other goods are Wood Saw Frames and Bucks, Stove, Barrel and Box Trucks, Vegetable, Slaw and Kraut Cutters, Towel Rollers, Hat and Clothes Racks, Towel Racks, Knife and Fork Trays, Lemon Squeezers, Mop Wringers, Step Ladder and Chair and patent Casters, all of which are in large assortments.

H. M. KELLOGG has disposed of his Hardware, Stove, plumbing and heating business at Cortland, N. Y., to Cramer & Spencer, who will continue at the old stand.

Aluminum Cooking Utensils.

The Aluminum Cooking Utensil Company of Pittsburgh, Pa., are now manufacturing and placing on the market about 100 different kinds of aluminum cooking utensils, a few examples of which are shown in the accompanying illustrations. In Fig. 1 is shown the Handy saucepan, which may be used for canning, preserving or pickling, also for making jellies, sauces, soups and broth, and for cooking vegetables. The Handy strainer cover is a special feature of this utensil. By a very simple device, shown in the engraving, the cover is locked to the kettle, and a strainer is provided, through which broths and liquids may be strained without scalding the hands or emptying the contents of the vessel.



Aluminum Cooking Utensils.—Fig. 1.—Handy Saucepan.

In Fig. 2 is shown one of the company's preserving kettles stamped from one piece. It is pointed out that the most delicate jellies, butters, preserves, sauces and all kinds of fruit can be thoroughly cooked in this utensil without the necessity of stirring and no danger of burning.

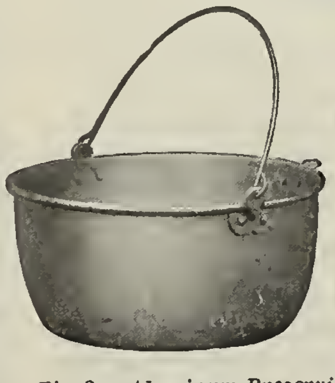


Fig. 2.—Aluminum Preserving Kettle.

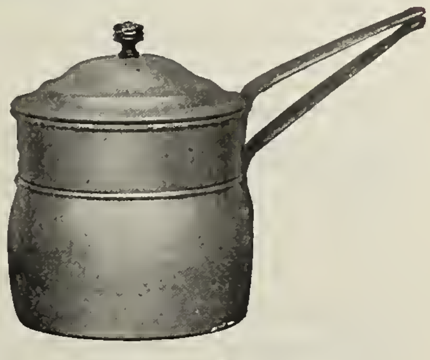


Fig. 3.—Aluminum Double Boiler.

An aluminum double boiler is shown in Fig. 3. It is composed of two pots, both made of the white metal. These pots may be used together in the usual manner, or either may be used alone. The cover is also of aluminum and made to fit snugly to the vessel.

Aluminum griddles are said to be especially effective for baking cakes without grease, and also as meat broilers. In Fig. 4 is shown one of the company's oblong griddles, made of cast aluminum and highly polished. These oblong griddles are made in two sizes, 9¼ x 19 inches and 12 x 24 inches respectively. The company also manufacture three sizes of round griddles, 12, 14 and 16 inches in diameter.

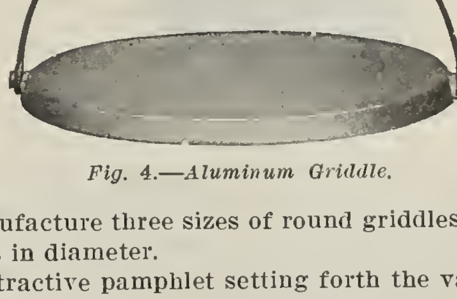
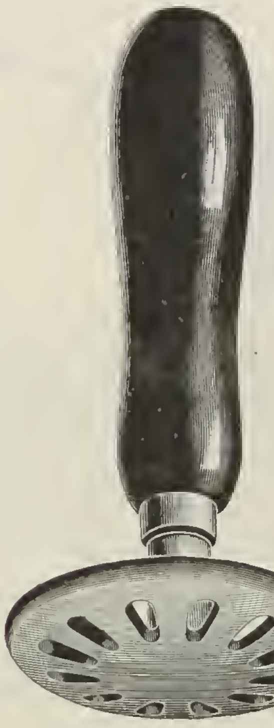


Fig. 4.—Aluminum Griddle.

An attractive pamphlet setting forth the value of aluminum ware for cooking purposes is issued by the Aluminum Cooking Utensil Company, which contains a considerable amount of interesting information bearing on the metal, its properties and recommendations, and comparing it with other metals. Hints are also given for the care and treatment of aluminum cooking utensils.

The Universal Vegetable and Fruit Masher.

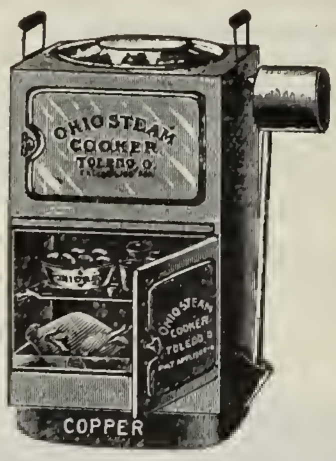
L. D. Parkhurst, Danielson, Conn., is placing on the market the masher herewith shown. The base is made of malleable iron, heavily tinned to prevent rusting. The wooden handle is provided with a heavy coat of black enamel, so that it will not be affected by hot water or steam when in use. The mashers are well and substantially made, and are packed half dozen in a box, one gross in a case.



The Universal Vegetable and Fruit Masher.

The Ohio Steam Cooker.

The accompanying cut represents a steam cooker put on the market by the Ohio Steam Cooker Company, Toledo, Ohio. The cooker is provided with a copper tank, a condenser and a tube to carry the waste steam back into the water tank at the base; also a gauge indicating when the cooker needs more water. Features of the cooker are its square shape, doors and removable shelves. The doors obviate the necessity of letting down everything to be cooked from the top, as is the case with a round cooker, and of lifting out different dishes to get at the desired article. It is explained that meat, pudding and vegetables may be cooked at the same time without emitting any unpleasant odors or mingling the flavors. The cooker is also recommended for canning fruit and other articles that are usually boiled in water or cooked in an oven. Among other points of excellence the manufacturers enumerate the following: That steam cooked food is more palatable and easier digested than food that is roasted, boiled or baked; that by the use of the cooker provisions, fuel and labor are saved; that when meals are delayed the food may be kept warm and not be spoiled by leaving it in the cooker, and that an entire meal can be prepared over a small gas or oil burner. The cookers are made in different sizes, with one and two doors and three or four shelves. A cook book accompanies each cooker, containing receipts that can be used in preparing different foods in the cooker.


OHIO STEAM COOKER TOLEDO O.
OHIO STEAM COOKER TOLEDO O.
COPPER

The Ohio Steam Cooker.

Stove and Hardware Dealers.

The establishment of W. H. Goodfellow & Son, jobbers and retailers of Hardware, Stoves, Tinware, Agricultural Implements, Harness, &c., Hollidaysburg, Pa., was badly damaged by fire a short time since, their loss being $9000, with insurance of $6000. The firm have resumed business, and request copies of the latest catalogues and price-lists.

Bernard Haggerty and **F. J. Gagner** have opened a new store in Adams, Mass., under the style of Haggerty & Gagner. Their stock comprises Shelf Hardware, Agricultural Implements, Sporting Goods, Tinware, &c.

The old firm of French & Hahnenkratt, dealers in Hardware, Phillipsburg, Kan., have gone out of business. H. L. Hahnenkratt has located at Washington, Kan., and entered into partnership with L. C. Ames, and will conduct the Hardware, Stove, Tinware and Sporting Goods business at that point under the style of Hahnenkratt & Ames.

Freilburger Hardware Company are successors to J. J. Freilburger in the wholesale and retail Hardware, Tinware, Furnace and Roofing business in Fort Wayne, Ind. The company have lately added the sale of Fishing Tackle and other Sporting Goods.

J. S. Ogden & Bros., wholesale and retail Hardware, Stoves, Tinware, Agricultural Implements, Sporting Goods, &c., Ashland, Ky., are now in possession of their handsome new store. The building is a three-story brick structure, 25 x 133 feet, with stone front. It is equipped with an hydraulic elevator. Since moving to the new premises the firm have added about $3000 worth of stock, and expect to add as much more during the coming season.

Christensen & Shaw, dealers in Hardware, Stoves, &c., Ballard, Wash., have disposed of their business to Scram & Gordon, who will continue at the old stand. William Christensen of the former firm has purchased the stock and good will of T. B. Lambson, Ellensburg, Wash., and will continue that business under the style of Ellensburg Hardware Company. The stock consists of Hardware, Stoves and Tinware, and will be materially increased by the new proprietor.

A. C. Candor & Co. are successors to the late Joseph Candor in the wholesale and retail Hardware, Stove, Agricultural Implement and Sporting Goods business in Lock Haven, Pa.

E. D. Patton and **E. V. Abbott**, under the style of Patton & Abbott, have opened a new Hardware store at 220 North Sixteenth street, Omaha, Neb., carrying a complete line of Builders' Hardware, Tinware and Stoves. The new firm will discount all bills.

Fee & Stewart Company, Melbourne, Fla., wholesale and retail Hardware and furniture, have just opened a branch store at Fort Pierce, Fla., and will appreciate duplicate sets of catalogues pertaining to Hardware, Tinware, Rope and Twine, Agricultural Implements, Wooden Ware, Electrical Supplies, House Furnishings, Stoves, Sporting Goods, Paints and Oils, Glass, &c.

Edwin M. Waller has recently bought the stock of the Atlantic City Hardware store, 2114 and 2116 Atlantic avenue, Atlantic City, N. J., and will be pleased to receive catalogues and quotations from manufacturers.

Thomas W. Brown, proprietor of the Standard Company, Boston, Mass., died at his home in Belmont, Mass., a short time since. Mr. Brown was about 70 years of age, and had been engaged in the manufacture of Egg Beaters for upward of 30 years. He was of a mechanical turn of mind and the inventor of many patented articles.

The National Association of Master Steam and Hot Water Fitters.

FOURTEENTH ANNUAL CONVENTION.

The delegates to the fourteenth annual convention of the National Association of Master Steam and Hot Water Fitters were met with a cordial greeting, not only by the citizens of Atlantic City, N. J., who are devoted to making things pleasant, but also by the weather and the host of the Rudolf. The convention was called to order at 10.50 a.m. on Wednesday, June 12, by the president, Stewart A. Jellett, who welcomed the delegates to the first meeting held at this notable health and pleasure resort and introduced to them the Mayor of Atlantic City, Franklin P. Stoy.

Mayor Stoy, who evidently is experienced in saying happy things and in extolling the attractions of Atlantic City to the visitor, interested and delighted the guests of the city and secured hearty applause when he spoke of the attention any would receive who might have occasion to visit for any purpose the departments under his immediate jurisdiction. In closing, the Mayor extended to the visitors the courtesies of an open city.

The president then appointed the following Credential Committee: A. E. Kenrick, chairman; J. Henry Howe, A. N. Chambers, W. W. Biggs and John C. F. Trachsel.

The president's address was then presented as follows and received hearty applause.

The President's Address.

Fellow members of the National Association of Master Steam and Hot Water Fitters: Custom has decreed that it shall be the duty of the president of any association such as ours to make an address at its conventions. I esteem it a privilege, as well as a duty, to address you at this, our fourteenth annual convention, and to bid you all a most hearty welcome.

The object of these annual gatherings of our members is not only the pleasant one of greeting old friends and making new ones, but also the more serious one for which this association was formed—to wit, the fostering of trade and commerce among master fitters and the advancement of the business of steam and hot water fitting.

It is not my purpose in this address to comment on the work done by our association during the past year, important though it has been; the reports of the National Executive Committee, the secretary, treasurer and the national vice-presidents for States will give you the details of what has been accomplished. Your careful attention is asked to these reports and the recommendations or suggestions made in them. It will be to the interest of the association that they be freely discussed, in order that the officers to be elected for the ensuing year may have the benefit of the views of the members as to what should or should not be done in order to carry out more fully the purposes for which we organized.

The past year has been a prosperous one in all lines of trade and master fitters have shared in it, hampered somewhat in certain sections by labor troubles, and in others by delays in the construction of buildings on account of the builders' inability to secure in time necessary building materials, notably steel structural work. Business continues good, and the look ahead is fairly satisfactory. It would seem wise, however, for the members of this association to give careful consideration to the future of our business in view of the changes that are taking place in the methods of doing business. This is an age of concentration. Corporations already large are growing larger, by either absorbing or forming alliances with their rivals.

This movement is not confined to railroad companies, shipping interests and the like, but is extending into every branch of trade. The "community of interest" idea seems to many the true solution of business problems created by long years of bitter competition.

Members should consider thoughtfully the proper method of advancing our business under these changed conditions. The broad motto of the business world is, "The maximum of business at the minimum of expense," and the policy of concentration is expected to further this object. It has been proven by experience that the old adage, "Competition is the life of trade," is capable of misinterpretation. Competition can overreach itself and become the death of trade, and unregulated competition is to-day the bane of many branches of business, including our own. Business men are at last learning the truth of this statement, and this accounts in a great measure for the growth of trade associations, particularly in such trades in which it is impossible or undesirable to consolidate. Again, in view of the enormous aggregation of power in the hands of the larger manufacturing corporations, the individual users of their goods, who are widely scattered geographically, are finding it to their advantage to have understandings through their trade organizations so that they may be able to secure fair treatment from such manufacturers as are inclined to be unfair, something they could not do as individuals.

The workmen in the various trades are meeting the same problem by the formation of labor unions and by federations of separate unions, hoping by concerted action on the part of the unions of the various trades to force consideration of what they claim to be their rights. It would seem that the workmen of our country are making more rapid progress in solving the problem of concentration than are their employers; as witness the rate of wages paid to-day with the hours of work, as compared with a time but ten years back. It is to the interest of master fitters to direct this movement rather than be forced by it. Better understandings should be reached between our members and their employees, covered by agreements for fixed periods of time. It seems to me that the solution of the labor problem rests primarily in agreements between employers and employees in each trade without reference to their effect on some other trade. Neither should a misunderstanding in any one trade be a source of contention in other trades, but the difficulty should be adjusted by arbitration within the trade where the misunderstanding has arisen. The master fitters in Philadelphia have recently entered into an agreement on these lines with their employees, which agreement recognizes the difference in the ability of men by fixing a minimum and maximum scale of wages. It also defines that all questions that may arise shall be settled by arbitration, and that strikes shall not take place because of trouble in other trades. This agreement also covers a number of other important matters on lines somewhat different from those usually found in such contracts.

Several other trades in Philadelphia have adopted the same general form of agreement, and we look forward to a more peaceful time as the result of their action. What the outcome of these changes that are taking place in business methods and of the new relations with our employees will be none can fully predict; but I am optimistic enough to believe that the concentration of brains being brought to bear on the question will result in a general bettering of conditions for both employer and employee, and redound to the general good of the country. Of course, friction is always present during the development of such a general movement as this, but by the exercise of patience, continued discussion, keeping clearly in mind the objects aimed at, it seems to me that the results can be only beneficial.

Let us consider seriously and practically at this convention our relations with the manufacturers and jobbers of steam fitting materials. This, to my mind, is the most important of the pressing questions that demand immediate consideration. The satisfactory solution of it rests largely with ourselves.

Manufacturers generally agree that it is to their best interests to sell their product through the legitimate steam fitter, assuming, of course, that the steam fitter is in a position to pay promptly for his purchases and also that he has the ability to erect the apparatus in such a manner as to do credit to its manufacturers. Their views on this matter agree with that of master fitters generally.

Every manufacturer that I have talked with on this subject agrees with this position, but many of them directly, and some indirectly, do not live up to it, but sell to the consumer on the plea that their competitors will do so if they do not, and that they will lose the business. This argument, "the other fellow is doing it," is worn threadbare. It never was anything but shoddy and has long been out at the elbows. If manufacturers and jobbers knew what master fitters think of it they would discard it entirely, or at least invent a new excuse.

There are good business reasons why the manufacturers and jobbers of steam fitters' materials should stop selling goods to consumers, and they know what these reasons are. The consumers as a class have no knowledge of how the apparatus should be erected in order to do its best work, and when they undertake to erect it themselves it is generally improperly done and the result is unsatisfactory. The manufacturer selling the goods is called in and must send an engineer or instructor to remodel the work. This means additional expense to him and at the same time he places himself in a position of antagonism with the legitimate steam fitter, who knows his business and probably has bid on the work, with the result that for the single boiler or other apparatus he has sold to the consumer he may lose the sale of a quantity of goods which the fitter, whom he has displaced, would have used in other work. If the manufacturer or jobber constructs the work for the consumer he naturally cannot expect the support of the master steam fitter, who by this action of his loses business that he has a right to expect. Result, a new opponent for the manufacturer who does business in this way.

Many manufacturers and jobbers may think that because comparatively few complaints are made to the National Executive Committee our members are indifferent. I do not think this idea is a correct one. Many of our members know of violations, but hesitate to report them and put themselves in the position of acting as complainant. In a number of other cases they have strong suspicions of the situation, but to secure the facts means considerable labor of an unpleasant nature on their part, and rather than go to this labor they satisfy themselves by refusing to handle the goods made by the concern in question and use their best efforts to keep them from getting business.

The motto of our association, "Who helps me I help," underlies the whole matter, and in order to reap the full benefit of organization the full meaning of this motto should be kept firmly in mind by both the manufacturers and jobbers and the master steam fitters. If a manufacturer supports honestly and carefully the trade resolutions, our members in turn should do everything in their power to support such manufacturer, as against the manufacturer who does not. If you concentrate your buying through manufacturers and jobbers who live up honestly to our trade resolutions, and cut off all purchases from those who do not, the list of those who will protect the trade will soon increase.

It is not fair to expect that manufacturers will live up strictly to the trade resolutions unless we in turn buy our goods from those who do. It is not fair for our members to expect the division to be "90 per cent. help me and 10 per cent. I help you," or expect others to help you continuously with the promise to help them at some future time not yet determined. The old adage, "Live and let live," fits the case. This matter has been brought clearly to my attention during the time I have been a member of the National Executive Committee. Many of our members seem to have the impression that the trade resolutions were created solely for their own benefit, whereas it is clearly the understanding that the manufacturer and jobber shall benefit jointly with our own members. If all our members keep this fact in mind and act accordingly, the results will surprise you. The working together of the members of our association with the signers of our trade resolutions will result in great trade benefits.

The power of this organization to remedy existing evils in our trade is not fully understood by many of our members, and certainly is not by the fitters who are outside of our organization; if they did fully understand it our membership would rapidly increase. To accomplish well the work that is to be done requires every member to do his duty. Do not expect your officers to carry the whole load. They, like yourselves, are busy men and cannot give all their time for your benefit.

Remember, this organization was not formed merely to defend ourselves against attack, but rather for the correction of evils in the trade and for the general betterment of trade conditions. The success of an organization such as ours is largely a matter of education upon trade questions, which education cannot be acquired in a day or year. There are few men in business who can fairly consider a business situation from the point of view of their competitors as well as that of their own, but they must do this before realizing that trade conditions as a whole must be bettered before any permanent improvement can be made in their own business. Our trade has been rather slow to understand the full benefits to be derived from proper organization. When it is understood I look to see the larger part of all the steam heating work in this country done by members of this association, not alone because it will be to the advantage of all reputable steam fitters to belong to such an association, but because it will be to the interest of owners to place their work where it will be done properly, and it should not be possible to have it so done except through the members of this association.

I trust the day is near at hand when there will be a perfect understanding between the manufacturer, jobber and master fitter—the three divisions of our business. The greatest danger we have to fear comes from the man who acts solely on the grounds of expediency. Any settlement that seems to prevent immediate pecuniary loss seems to him satisfactory, and he uses his energy to secure such settlement, not taking the broad ground that is necessary to any successful permanent agreement. This is like giving a demand note in cancellation of a debt and congratulating one's self that the matter is settled.

I trust this convention will look carefully into the matter of increasing the membership of this association. As our membership increases the buying power of the organization increases, and its influence increases correspondingly. It is, therefore, of the utmost importance that this matter be given earnest consideration. The object is not merely to secure members; we want the best men in the business. By this I do not mean to imply the men with the largest financial backing, but any fitter who does good work and pays his bills and is a fair minded man. If his reputation is not good, then, no matter what his financial ability or the length of time he has been in business, it would be better for this organization that he remain outside. The questions of the coming year's business, the growth of this association and the lines on which it should work should be given your most careful attention, and I trust that the committees that are to be appointed to handle the several matters which are submitted to them will give their time and best thought to these questions. I would ask the members in attendance to suggest matters that will be of interest as to improvements in trade relations, as to method of work to be followed in developing this organization, &c., and will present these questions in the meeting or before the proper committees.

We cannot accomplish all that is to be desired in a year, but every step forward is that much gained and tends toward the strengthening of the organization, and, through the organization, of all of the individual members composing the same.

The underlying principle of all successful business is confidence. Let us begin by having confidence in one another and exert ourselves to see that this confidence is not misplaced.

Keep fair with your fellow members—let no temporary advantage lure you from this. Make use of and support your organization and you will find in return that it will repay you.

After a recess, to allow the Credential Committee time for their work, the following members were reported entitled to the convention floor:

List of Members.

DISTRICT OF COLUMBIA.

Washington.

W. W. Biggs Heating & Ventilating Company, E. J. Febrey & Co., Walter Higgins, Hubbard Heating Company, Johnson & Morris, Zellers & Co.

INDIANA.

La Fayette.

R. A. Hawkins, Lane-Pyke Company, Cornelius O'Neill, Oversch & Werkhoff, A. R. Schmitz, Wallace Brothers Company, H. M. Wheeler Company.

MARYLAND.

Baltimore.

Thos. C. Basshor Company, Crook, Horner & Co., C. C. Heath & Co., W. W. Towson & Co., Wells & Newton Company, Wm. E. Wood Company.

MASSACHUSETTS.

Boston.

W. E. Bartlett, Braman, Dow & Co., Buerkel & Co., Cleghorn Company, Isaac Coffin & Co., Albert B. Franklin, Wm. H. Gallison Company, Ingalls & Kendricken, Lynch & Woodward, J. P. Perry & Co., Ross & Seabury, A. A. Sanborn, Smith & Anthony, Walker & Pratt Mfg. Company, Walworth Construction & Supply Company, Walworth Mfg. Company.

Brookline.

Kendrick Brothers.

Taunton.

W. R. Park & Son.

Worcester.

Braman, Dow & Co., John Burleigh & Co., Edwin Hawes, O. S. Kendall & Son, Washburn & Garfield Mfg. Company.

MINNESOTA.

Crookston.

J. E. Morrisey.

Duluth.

American Heating Company.

Minneapolis.

Archambo Heating Company, John R. Foster, W. I. Gray & Co., Kelly & Lamb, T. M. Maguire, Moore Heating Company, Pond & Hasey Company, W. F. Porter & Co., Saxton & Phillips Company, Tunstead Heating Company, C. S. Wentworth Company.

St. Paul.

George M. McGearey.

MISSOURI.

Jefferson City.

Jefferson Heating Company.

Kansas City.

E. D. Hornbrook.

St. Louis.

Edwin P. Ambler, J. T. Bradley & Co., E. W. Chase & Co., Cullen & Stock Heating & Ventilating Company, Front Rank Steel Furnace Company, John B. Hughes, Materne Mfg. Company, Modern Heating Company, Jas. D. Ryan Heating & Ventilating Company, Sodemann Heat & Power Company, Urbauer, Atwood & Co.

MONTANA.

Anaconda.

J. A. Hasley.

Butte.

F. J. Dorhofer, Esche Plumbing & Heating Company, W. J. Killeen, I. Krueger, W. E. Lindsley, R. Morrison, A. J. Walker, Edwin Wright.

Great Falls.

Western Hardware Company.

NEW JERSEY.

Atlantic City.

Currie Company, L. E. Freeman, V. B. Giffin & Son, Hinckle & McDevitt, McDevitt Bros., John H. Moore, Michael Towhey.

NEW YORK.

Albany.

E. P. Bates.

Binghamton.

Gaylord & Eitapenc Company.

Buffalo.

Barnd & Geiger, Daniel Burgmaster, Chas. A. Criqui, John W. Danforth Company, J. H. Knepper & Son, J. H. Ruckel & Co., M. F. Tallmage, H. J. Wood.

Dunkirk.

N. J. Lennertz, A. G. Sippell.

Elmira.

John T. Sadler & Co.

Geneva.

Emig & Hatmaker.

Griffin's Corners.

A. H. Todd.

Hudson.

Byron Parker.

Kingston.

Henry E. Wiebers.

Mount Vernon.

Wm. McGonigal.

New York City.

Baker, Smith & Co., Baldwin Engineering Company, Blake & Williams, Jas. Curran Mfg. Company, Frank Dobson, Evans, Almirall & Co., Francis Bros. & Jellett, Gillis & Geoghegan, Johnson & Morris, L. G. Kirk, John Neal's Sons, New York Steam Fitting Company, Phillips, Doup & Co., E. Rutzler, John F. Sayward & Co., Geo. A. Suter & Co., Walker & Chambers, Wells & Newton Company.

Niagara Falls.

F. W. Oliver & Co.

Poughkeepsie.

P. C. Doherty.

Rochester.

Barr & Creelman, Chapman & Goodenough, F. H. Falls, R. T. Ford, Howe & Bassett.

Rosendale.

L. F. Bannon.

Schenectady.

John Allen, Levi Case & Co., Thos. F. MacGregor, Ridgway & Tyler Company, John R. Sheehan, Stevenson Brothers, J. V. Vrooman's Sons, James T. Wasson, Delos H. Williams.

Syracuse.

E. P. Bates, Edward Joy, Wm. N. Tobin.

Troy.

Wm. Ferguson, J. J. Horan & Co.

Utica.

Breen Bros., Stradling Plumbing & Heating Company.

NORTH DAKOTA.

Fargo.

W. D. Allen, A. J. Craig, Fargo Plumbing Company, E. J. Harrington, C. H. Perritt.

PENNSYLVANIA.

Erie.

Albracht & Shaughnessy, W. J. Butler, Erie Heating & Plumbing Company, Karch Bros., Geo. B. McIntire, R. T. Williams & Co.

Johnstown.

Johnstown Supply House.

Philadelphia.

Baker, Smith & Co., David R. Burns, S. Faith & Co., Francis Bros. & Jellett, John Gormly, P. Gormly, Roberts Leinau, Wm. Mulligan, Harry F. Murphy & Co., Henry B. Pancoast & Co., W. J. Robinson, Robert Scott, John P. Smith & Co., Thompson Brothers, John C. F. Trachsel, Chas. F. West.

Pittsburgh.

Andersen-Darragh Company, Baker, Smith & Co., Iron City Heating Company, Maginn & Lewis, McGinness-Smith Company, Pittsburgh Heating Company.

STAR (NATIONAL) MEMBERS.

ALABAMA.

Farrell Heating & Plumbing Company, Anniston.
Simmons & Young, Mobile.

COLORADO.

Chas. J. Reilly, Denver.

CONNECTICUT.

T. P. Terry & Son, Ansonia.
Curtiss & Pierpont Company, New Haven.

ILLINOIS.

Davis Construction Company, Chicago.
Henry Sauer, Morrison.

KENTUCKY.

F. A. Clegg & Co., Louisville.
Jos. McWilliams Company, Louisville.

MAINE.

W. A. Spate, Eastport.
John B. Smith, Lewiston.

MASSACHUSETTS.

J. W. Gifford Company, Attleboro.

MISSISSIPPI.

P. W. Mulvihill, Natchez.

NEW JERSEY.

F. W. Miller, East Orange.

OHIO.

Englehart & Eckart, Akron.
Shaw-Kendall Eng. Company, Toledo.

WISCONSIN.

Otto Biefeld & Co., Watertown.

On motion the meeting adjourned until 3 o'clock.

THURSDAY AFTERNOON.

The meeting opened at 3 o'clock with President Jellett in the chair, and announcement was made of the appointment of the following committees:

DISTRIBUTION OF REPORTS.

E. D. Smith, E. J. Febrey, J. W. Danforth.

AUDITING COMMITTEE.

J. J. Collins, Charles F. West, W. J. Baldwin, Jr.

APPEALS AND GRIEVANCES.

E. Rutzler, J. F. Sadler, John B. Hibbard, Charles A. Criqui, J. F. Buerkel.

CONSTITUTION AND BY-LAWS.

J. Leland Wells, P. Gormly, John Creelman.

WAYS AND MEANS AND GOOD OF ORDER.

J. Henry Howe, S. J. Geohegan, J. F. Buerkel, E. Joy, Harvey Middleton.

NOMINATING COMMITTEE.

E. D. Smith, John Gormly, J. J. Collins, P. H. Kendricken, Charles A. Criqui.

Henry L. Hall, chairman of the Executive Committee, having been recalled home, the annual report of the Executive Committee was read by the president.

Report of the Executive Committee.

June 11, 1901, the National Executive Committee held their first meeting at the International Hotel, Niagara Falls, and organized by electing Henry L. Hall as chairman, and Henry B. Gombers as secretary, to succeed himself, he having served in that capacity since April, 1897. Francis A. Williams, Stewart A. Jellett, Albert N. Chambers and Henry L. Hall were appointed a subcommittee to transact such detail business as was not necessary to present to the National Committee.

SURETY BONDS.

Under a provision of the constitution of the National Association the national treasurer and the national secretary are required to provide surety bonds, and in accordance therewith these officers delivered to the chairman of your committee bonds of an approved surety company for the required amounts.

ADMINISTRATION.

Your subcommitee have been enabled by their authority to dispose of a vast amount of detail work that would have been delayed and possibly not accomplished at all had it been necessary to present the subjects to each member of our widely distributed National Committee. In many cases there were subjects of such weight that your subcommittee were unwilling to make a decision until each member of the National Committee had given the subjects due consideration. We are happy to state that all the acts and decisions of your subcommittee have been heartily seconded and approved by each of the committee who reside at a distance from our national headquarters.

Our headquarters have been open for business every day in the year except Sundays and holidays, and each member of your committee has been ready and willing to answer an instant call for any service demanded for the interests of our craft. We have endeavored at all times to observe with scrupulous care the provisions of the constitution and by-laws in operating the business of this association. Our object has been at all times to eliminate any personality and secure the greatest good for the greatest number, trusting that such action on our part would add greater dignity to the elevated position held by this association in the esteem of its members and others.

FINANCES.

Under the head of finances the treasurer's report will represent with accurate detail the gratifying condition of our treasury.

MEMBERSHIP.

During the past year 32 members have been added to our membership roll, while 19 have been dropped by reason of death, resignation or suspension on account of non-payment of dues. In each case of suspension for nonpayment of dues the offending members were given full and sufficient notice that such action would be taken, and ample opportunity was afforded to prevent summary action if the members were so disposed. There have been many applications for membership, but on investigation it has been found that some of the applicants were not eligible.

There is a strong feeling throughout the association that the strength of a body is measured by its quality rather than its quantity, and we may congratulate ourselves that the net gain of 13 members is of a quality that is to be greatly desired. Since the close of our fiscal year we have added to our membership, and a detailed report of it will appear at the next convention; but for the purpose of general information we can state at this time that new local associations have been organized at Baltimore, Md., Atlantic City, N. J., Lafayette, Ind., and at central points in Montana and North Dakota.

OFFICIAL BULLETIN.

Our national secretary, Mr. Gombers, has had entire charge of this work and has executed all of the details in connection therewith with admirable efficiency and to the full satisfaction of your committee. We have at all times acted in an advisory capacity with reference to the policy of the "Official Bulletin."

STANDARD FLANGES.

Through the medium of the "Bulletin" we have advised our members that at the meeting held by a number of representatives of the principal valve and fitting manufacturers in the United States there was formulated a standard for extra heavy work. Our members and others interested will please bear in mind that this schedule does not supersede this association's schedule of standard flanges; but, on the contrary, can be considered as supplying a long felt want in the matter of a standard for extra heavy work. The schedule of standard flanges adopted July 18, 1894, by our association provided certain requirements for work with pressure under 80 pounds, as well as for work with pressure for 80 pounds and over.

There has been a difference of opinion as to how high a working pressure this standard should apply to, and it has been the contention of some of the well informed people in the trade that it ought not to be used for work exceeding 150 pounds pressure, because work requiring 150 pounds pressure and over would necessarily call for special fittings, which would be known as extra heavy. We understand that the majority of valve and fitting manufacturers have in the past used the same dimensions of flanges, but not thickness, for pressures averaging 125 pounds and upward, and this will probably be continued as a practice.

It is the opinion of one of the committee of manufacturers who compiled the recent schedule for extra heavy fittings that our association's standard of thickness will be used for pressures to 150 pounds; and for work above 150 pounds pressure the standard that has been suggested by the manufacturers' committee will be used. Therefore, it is again called to your attention, and you are requested to note that the standard flange schedule of our association still remains in force for ordinary work up to 80 pounds pressure and 125 pounds pressure respectively, and that the new manufacturers' schedule now presented to the trade will apply to work calling for 125 to 250 pounds pressure per square inch. We would recommend that this matter be referred to the convention for discussion and adoption.

TRADE RESOLUTIONS AND LIST IN ACCORD.

During the past year your committee have maintained a vigorous campaign in the interests of our relations with the trade at large. We have had many applications from manufacturers and supply houses to place them on our list in accord, and in every instance we have adopted the practice of thoroughly investigating the propriety of the application, and wherever we felt satisfied that the applicants would act in good faith we have placed them on the list, with the gratifying result that 41 names have been added to the list in accord. We have removed from the list in accord 45 names by reason of the firms going out of business.

NEW YORK STATE ASSOCIATION.

At the semiannual meeting of the New York State Association, held in Syracuse, December 10, 1901, a resolution was unanimously adopted recommending to the National Executive Committee that the question of separately letting steam and hot water contracts be taken up with the National Association of Architects and all supervising and State architects. It is believed that missionary work in this direction would materially assist in the elimination of steam work from general contractors.

The Executive Committee of the National Plumbers' Association, in session at the hotel, was invited to visit the convention. The invitaton was accepted, and President E. D. Hornbrook of Kansas City and Vice-President Charles A. Polacheck of Milwaukee addressed the convention on behalf of the Plumbers' Association. P. H. Kendricken of Boston responded on behalf of the convention.

The annual reports of the treasurer and the secretary and of the State vice-presidents were read and received, and the matters therein requiring consideration referred to the appropriate committees, as were also a number of resolutions submitted from various sources.

Report of the Secretary.

My sixth annual report will be a rehearsal of part of the work assigned to me by the Executive Committee during the past fiscal year. In presenting the subjects taken up in this report I will ask the indulgence of the association to the extent of permitting me to express an opinion or make suggestions upon some of the subjects that interest all those who have been identified with carrying on the work of the organization.

The Executive Committee's report, in the hands of Henry L. Hall, chairman of the committee, shows the general condition and presents some suggestions that are worthy of your careful consideration. The work of the Executive Committee has been promptly attended to by the subcommittee at national headquarters, and there arose no question that required the personal attendance of the other members of the committee, but if there had been any occasion for the presence of all the members, I have no doubt but what they would have cheerfully responded to the call.

Some of our members may not be aware of the fact that certain large concerns interested in the manufacture of steam heating material now maintain a principal office in the city of New York. Heretofore whenever we have had occasion to communicate with some of them it has taken valuable time for the necessary correspondence to pass to and fro, but owing to the proximity of their present offices it has enabled us to confer and obtain the necessary information, thus eliminating all the unpleasantness of delay, and also tends to avoid misunderstandings that could easily arise through the misreading of letters, &c. Some of the large manufacturers, whose principal places of business are located in various cities, have occasion to be present in New York at stated times, and it gives our Executive Committee an opportunity to meet them at our headquarters or elsewhere personally. It also gives your secretary a chance to confer with any of them whenever it is of interest to the association that he should do so. It seems as though the tendency in the East and the Middle West is to concentrate the principal offices or headquarters of associations at New York, and this being so, it certainly will assist to a very great degree the better conduct of negotiations and of necessity a quicker decision on matters of mutual interest.

OFFICIAL BULLETIN.

The statement was made in my report last year that I did not recall a single instance where any just or serious complaint had been made concerning our management of the "Bulletin." I can repeat that statement at this time, and go a trifle further by saying that we do not infringe on the rights of the trade journals or in any way do what would be considered unprofessional between contemporaries. We always give credit to the trade papers from which we take an extract, or from whom we obtain a cut to illustrate an article published in the "Official Bulletin."

We are not always so fortunate, however, and without any desire to stir up our esteemed contemporaries, it is nevertheless timely to request them to in future give us credit for what extracts they are kind enough to clip from the "Official Bulletin" for publication in their own journals. We are always willing to accommodate our friends with anything within reason, even though it does at times put us to some expense and inconvenience. During the past year we have published articles on various "Trade Abuses," written by one of our members, who is capable of producing articles of merit, and it is to be hoped that he will continue to furnish us with copy for publication. Other members should emulate this one and favor us with articles of interest upon any subject that concerns the welfare of the organization especially and the trade at large generally.

COMPLAINTS.

Under this heading would properly come a statement setting forth the various kinds of complaints made to national headquarters and the disposition of the same. On file at headquarters will be found all the data referring to complaints made against concerns on List in Accord, where it is at the disposal of all who are entitled to the same.

STANDARD FLANGE SCHEDULES.

During the past year the requests for copies of the schedules published by this association have been quite numerous. Applications have been made by members, manufacturers on List in Accord and concerns not on List in Accord, while one of the most recent ones (about two weeks ago) came from a man who was about to commence the manufacture of valves, and desired to start in with our standard, owing to the fact that he had found that the many valve manufacturers had schedules of dimensions of their own quite divergent.

All requests for copies of the schedules received from our members and manufacturers on List in Accord have been complied with, but there have been some requests from concerns not on List in Accord that have been unfavorably considered. One case in mind as an example: A Western concern more than five years ago refused to comply with the request made by a local association that the manufacturer in question should enter into an agreement with other manufacturers and dealers to protect the steam fitting trade in a city where we had a local association. The concern in question wrote us for copies of the Standard Flange Schedule issued by us, and the letter sent in reply was as follows:

> Replying to your letter, will state that the Standard Flange Schedules prepared and issued by us are for the use of our members, as well as for manufacturers and dealers whose names appear upon our List in Accord. As your name does not appear on the List in Accord we regret that we cannot comply with your request to furnish you with copies of same.

Your secretary is inclined to think that we should not show any favor to concerns who deliberately refuse to acknowledge the justice of our reasonable request that they extend the same protection to the trade that other manufacturers and dealers are willing (and many times voluntarily) to concede.

NATIONAL IRON LEAGUE.

You will doubtless recall the various items that have appeared in the " Official Bulletin " concerning the petition which the National Iron League presented to the House of Representatives at Washington. Much good was expected to come of this petition if members of this and other associations connected with the building trades would sign this petition, and also write personal letters to United States Senators and Congressmen urging them to favorably consider the proposition presented.

The subject is one that ought to have the hearty support of members of this association if occasion arises whereby it becomes necessary to again take up the petition to Congress. Who is there that can present a sound argument in favor of a steam heating contractor being as well off working as a subcontractor to a general contractor on a contract with the United States Government, as he would be if he held a contract direct from Uncle Sam ?

There may be cases where a master steam fitter would be well taken care of by a general contractor on work for private owners, and no hardship entailed and no objection offered to the taking of a subcontract from an honest general contractor, who awards the work to the bidder at figures originally given in securing the general contract. The crying evil is that which works to the disadvantage of a subcontractor through having to take a contract on a 75 or 80 per cent. payment basis, while the general contractor receives 85 or 90 per cent. payments, and thus holds money in his pocket which should properly go to the master steam fitter who acts as the subcontractor.

While on the subject of general contractors, it may be well to state that the National Executive Committee has ruled that under no circumstances can such concerns become members of this association. This ruling has become known to many of our members, but perhaps not to all.

Several general contractors have in their employ men who are supposed to take charge of the power, heating and ventilating work. This of itself is not objectionable, but when these building constructors set up what they term a " heating department," it becomes a question for this association to consider, in view of the fact that they go before the public as employing journeymen steam fitters, and are in the market to purchase material. Some manufacturers thought that such concerns were eligible as customers for steam heating material because this association had many years ago ruled that manufacturers who had a gang of steam fitters (regularly employed as such) in their employ would be entitled to a place on the Exempt Consumers' List. This certainly is an erroneous view to take. These building constructors are not manufacturers such as contemplated in the old ruling; furthermore, there is no such ruling in force at this date.

The trade resolutions adopted at Buffalo in 1899 are very clear and concise, and there ought not to be any excuse for misinterpreting them.

GENERAL CONDITION OF THE ASSOCIATION.

The secretary's report made at the eleventh annual convention, held at Buffalo in 1899, contained the following paragraph:

> It is quite natural that your secretary should have formed some opinions of his own, based on the experience obtained during the past two or three years. Speaking without bias or prejudice, and without fear of the statement being successfully controverted, I will say that this organization is to-day in a much healthier condition than it has been at any time since my acquaintance with its affairs. With the hope that the end of the coming fiscal year will show even a better state of affairs, I respectfully submit my report.

The report made at the twelfth annual convention, held at Boston in 1900, contained a statement somewhat similar, in so far that it stated that the continuation of the condition of the previous year hoped for was a fact. Last year at the thirteenth annual convention, held at Niagara Falls, your secretary stated that many reasons could be advanced for believing that the association was on a much firmer basis than it had been at times in the past. There was one feature, however, that received special mention, and that was the friendly feeling that existed between members and the expressed desire to stand together on questions that involved the interests of the association, as well as to give their countenance and aid to movements looking toward the betterment of the conditions of the trade at large, even where it must of necessity benefit people in the business who are not members of the Master Steam and Hot Water Fitters' Association.

It is a fact that many men in the business of steam and hot water heating obtain protection and consideration to which they are not entitled. This condition to a great extent arises from the magnanimous and philanthropical stand taken by the association regarding our trade resolutions. We do not request the manufacturers of steam heating material to refuse to sell a master fitter because he is not a member of this association, but we do request the manufacturer to refrain from selling those not regularly established in the business of installing heating plants. We do claim, and in many cases manufacturers concede, that members of this association are entitled to better prices than those who are in the business but who are not members of the National Association of Master Steam and Hot Water Fitters.

Some new members may not see benefits of such a nature as to be readily recognized, but the adage, " All things come to him who waits," has been proved over and over again, and sooner or later the " doubting Thomases " will be able to see the advantage of holding membership in the National Association.

My hearty congratulations are offered to the members who stand loyal and true to all the precepts and principles upheld by this association, and I trust that the value of the association motto, " Who Helps Me I Help," will be fully recognized and continually made use of to the honor of the organization.

Treasurer Albert N. Chambers of New York presented his report, showing a balance in hand May 1, 1902, of $2910.90.

The balance of the session was executive to its close, when the meeting adjourned until Friday at 10 a.m., to allow the several committees an opportunity to consider the matters referred and bring in their reports for action by the convention.

FRIDAY MORNING.

(*By Telegraph.*)

The convention opened in executive session on Friday, and at the close of the executive session went into open session and elected the following officers:

President, Alfred E. Kenrick, Brookline, Mass.

Vice-President, Henry L. Hall, New York.

Treasurer, Albert N. Chamber, New York.

Board of Directors: John D. Hibbard, Chicago; Jno. J. Collins, St. Louis; Jno. H. Howe, Rochester; Stewart A. Jellett, Philadelphia; P. Gormley, Philadelphia.

Sergeant-at-Arms, Geo. H. Zellers, Washington.

The officers also are members of the Board of Directors. Henry B. Gombers was unanimously elected secretary by the board. The session then adjourned.

THE NEW YORK STEAM FITTERS.

On Wednesday afternoon the 3 o'clock train on the Pennsylvania road received the greater part of the members from New York and their friends. They were enabled to travel comfortably in a chair car secured through the efforts of the national secretary, who was already in Atlantic City to complete arrangements for the reception of arriving members. However, his private secretary, Miss Birge, who was ably supported by A. B. Jenkins, maintained the prestige of the National Headquarters for courteous hospitality.

The travelers, headed by National Vice-President A. C. Kenrick of Brookline, Mass., were S. J. Geohegan, E. D. Smith, J. L. Wells, Frank Dobson, Ambrose O. Neal, A. N. Chambers, Mrs. A. N. Chambers, Master Chambers, Enoch Rutzler, Miss Rutzler, A. L. Fowler, Mrs. A. L. Fowler, Master Fowler, James Curran, Mrs. James Curran, National Treasurer H. L. Hall, J. B. Bernhard, Mrs. J. B. Bernhard, A. B. Jenkins, C. F. Webber, Wallace M. Cosgrove, E. H. Roberts, Mrs. E. H. Roberts; Frank K. Chew of *The Metal Worker*, A. A. Ainsworth of the *Plumbers' Trade Journal*, and H. A. Smith of the *Engineering Review*.

The same train also carried R. D. Reed and C. A. Faulkner of the H. B. Smith Company, Westfield, Mass.; C. H. Gott, E. F. Glove and Frank T. Bassett of the American Radiator Company, New York and Boston, and H. E. Adams of Boston. There was considerable visiting in the car and the trip was decidedly enjoyable. On arriving at Atlantic City Secretary Gombers met the train and soon had all comfortably quartered at the Hotel Rudolf, where they were welcomed by Mr. and Mrs. J. Henry Howe of Rochester, N. Y.; Mrs. Henry B. Gombers and Miss Blackwood.

THE TRADE PRESS.

It was a busy time for the trade press, but Secretary Gombers has a kindly feeling for the representatives, to whom he has granted special favors in the provision of papers and reports which he has ready to present at the proper time. These substantial courtesies are fully appreciated by those to whom they were extended. The press was well represented: *The Metal Worker* by Frank K. Chew, the *Engineering Review* by H. A. Smith, S. D. Bruce and C. Williams, the *Plumbers' Trade Journal* by A. A. Ainsworth, James M. Heatherton and C. W. Field, and *Domestic Engineering* by H. T. Sheriff and E. Winslow. Mr. Ainsworth, as usual, did some good work with his camera.

"FITTINGS."

George Downe of the American Radiator Company, Chicago, was one of the first to reach the convention Mecca and constituted a whole reception committee in himself, recognizing and cordially greeting every arrival.

* * *

The Monash-Younker Company, Chicago, were ably represented by L. P. Monash, their New York representative at 45 Centre street. High grade air valves will doubtless be more generally used by the fitters than heretofore as a result of the information given at this convention.

* * *

Parlors J and K were occupied by the Standard Steam Specialty Company, 111 Fifth avenue, New York, where E. H. Roberts and George I. Roberts dispensed genuine and substantial hospitality and literature of every specialty a steam fitter could need, from a grate bar to a damper regulator.

* * *

F. H. Moore of Utica and D. E. McCabe of Chicago represented the International Heater Company, Utica, N. Y., and a line of boilers and heaters adapted to every demand that a steam fitter might have to meet.

* * *

Parlor G was occupied by Jenkins Bros., New York, and A. B. Jenkins, as usual, reflected his genial enjoyment of the steam fitters' convention to each of the never ending line of visitors. He was assisted in dispensing hospitality by C. F. Webber of New York and Harry G. Logan and W. G. Lecompte of Philadelphia. The members received as souvenirs celluloid rules and pocket knives that will be a pleasant reminder that everything coming from Jenkins Bros. is all right.

* * *

John B. Hughes lost another lap in his contest with A. E. Kenrick for regular attendance at every convention. Mr. Kenrick now enjoys this unique distinction alone. Many friends inquired of J. J. Collins of St. Louis if there was anything serious preventing Mr. Hughes from being on hand.

* * *

Charles Criqui, Jr., Buffalo, N. Y., about a year old, was the youngest delegate and shared the honors of attention with Vice-President Kenrick. Nothing escaped the notice of this bright little man, and Mrs. Criqui, who is a favorite, was quite generally congratulated.

* * *

John B. Jones and W. H. Switzer of the Utica Heater Company, Utica, N. Y., were down in the interest of their line of steam and hot water heaters. They displayed a new boiler, the production of R. W. Jacobs of the Keystone Boiler and Radiator Company, Huntingdon, Pa., which combines cast iron and steel in its construction very effectively, securing a long fire travel, a large fire surface and a grate adapted for durability and for all parts of a square fire chamber clear. Fred. D. Johnson, their New York representative, lent able assistance in presenting the merits of their boilers.

* * *

N. E. Frost of the Wm. H. Page Boiler Company, Norwich, Conn., has always been identified with the type of construction presented in the Volunteer and All Right boilers, and has secured their installation in many important buildings.

* * *

The Keystone Boiler & Radiator Company, Huntingdon, Pa., was represented by R. W. Jacobs, who showed a Keystone boiler and also a Keystone three-column radiator with a shield to throw the warmed air out into the room and secure a more effective circulation. A new catalogue gives full particulars of both boiler and radiator. The company are making a two-column radiator in all hights, from 12 to 45 inches.

* * *

Quite a bunch of what was said to be Hindoo money found on the beach was purchased by W. M. Cosgrove of the A. A. Griffing Iron Company, Jersey City, N. J. After stamping the mystical word Bundy on it he distributed it as souvenirs to remind the recipients of the Bundy line of boilers, radiators and steam specialties.

* * *

A neat display of radiators was made by the Niagara Radiator Company, Buffalo, N. Y., in charge of C. F. Walther, E. L. Stock and E. E. McNair. One was a new six-column radiator made 16, 18 and 26 inches high, and another was the new Niagara wall radiator. These, with their three-column plain surface and ornamented radiator, were sufficient to attract a great deal of attention.

* * *

A No. 1 Mercer boiler and a new wall radiator were exhibited by the H. B. Smith Company, Westfield, Mass., and R. D. Reed and J. C. Faulkner had no difficulty in finding plenty who could testify to the merit of the boiler and who were willing to take chances on the efficiency of the radiator.

* * *

The Wisconsin Graphite Company, Pittsburgh, Pa., made a display of their pipe joint paste and gave small cans to the delegates for test. Secretary Fred. J. Shaler was assisted by Thomas R. Davis in distributing a little catalogue giving explanation of its various uses.

* * *

W. M. Mackay of the New York office of the Hart & Crouse Company and the New York Radiator Company, Utica, N. Y., secured the interest of the delegates in the Royal boilers and New York radiators.

The Paragon boiler, made by Isaac A. Sheppard & Co., Philadelphia, will be remembered as the result of many little chats with G. W. Barr and the new catalogue which he gave as a substantial reminder of its merits.

* * *

J. B. Bernhard represented the boiler branch of the business of Abendroth Bros., New York, and distributed attractive literature in reference to the boilers.

* * *

The merits of the varied line of steam specialties made by Kieley & Mueller, 7 West Thirteenth street, New York, were explained by Timothy Kieley and by James J. Brogan of Brogan & Co., 810 Race street, Philadelphia. They showed the Climax damper regulator, the new Kieley cantilever expansion trap, and models of the Mueller steam trap and a Kieley steam trap.

* * *

Steam pipe covering was the theme of many discourses by James B. Colladay, representing the Philip Carey Mfg. Company, Philadelphia, Pa.

* * *

The extended and newly equipped plant of the Vance Boiler Works, Geneva, N. Y., was explained as at the disposal of the steam fitters by James R. Vance, and a good impression was made by the presentation of a little tape measure in a celluloid case bearing a picture of the Vance portable boiler on one side and the company's brick set boiler on the other.

* * *

H. H. Hess of Detroit and R. C. Kriebel of Philadelphia, of the United States Heater Company, Detroit, were capital talkers and mascots for this line of steam and hot water boilers.

* * *

W. H. Clark distributed a very neat souvenir in the interest of the Sunshine line of heating apparatus, made in the "Sunshine Shop" by Orr, Painter & Co., Reading, Pa.

* * *

The United States Radiator Company, Dunkirk, N. Y., were represented by W. S. Appleton, New York; M. E. Danforth, Washington, and Harry S. Martin of the home office. "We have it in any number of columns you want and in all hights" is the way they talked radiators.

* * *

The Prizer-Painter Stove & Heater Company, Reading, Pa., were ably represented by H. T. Gates, manager of their New York office, and many found attractive features in the Henderson-Thermo line of heaters when explained by Mr. Gates.

* * *

To inqure about "168 Albany" is considered to be perniciously inquisitive by some who have not met practical jokers.

* * *

The American Radiator Company, Chicago, apparently arranged a family gathering. George Downe and Charlie Foster came from Chicago, Frank T. Bassett from Boston and C. H. Gott and E. F. Glove from New York, so that direct, semidirect and indirect attractions could be presented in such an Ideal manner as to be captivating when the time for the final order came.

* * *

Everybody knew that there was a Richmond in the field when Charlie Morrison came from Pittsburgh and J. S. Conrand and W. M. Brownback from Philadelphia to see that the new Richmond Company of Norwich, Conn., and the new magazine and surface burning line of Richmond boilers were properly and impressively brought to the attention of the heating contractors. The new Richmond catalogue tells it all.

* * *

Thomas Kelly of Thomas Kelly & Bro., Chicago, was the first to be on hand with an exhibit of plumbing goods. He showed the Kelly safety basin, but with the ocean so near at hand a lavatory had less attractions than it would have had in some other city.

* * *

F. C. Green of Brown & Green, Saratoga Springs, N. Y., showed the "Steam and Gas Fitters' Price Book," which contains illustrations of standard goods and gives standard list prices and net prices at several different discounts, with spaces for retail and jobbing selling prices and cost. It is a convenient book for the estimator.

* * *

H. D. Kellogg headed the Philadelphia contingent of the H. B. Smith Company, Westfield, Mass., followed by H. J. Walther and W. C. Jackson. Being from the Quaker City, their statements were plain facts on the boiler and radiator question.

* * *

A. C. Mercer, who came from New York, spent most of his time enjoying a renewal of old acquaintances. Of course he was too modest to talk the Mercer boiler.

* * *

The Powers Regulator Company, Chicago, were represented by W. W. Morgan and C. A. Morton. There is no occasion to waste the fuel purchased at coal strike prices if their temperature regulator apparatus is half what they claim for it.

THE HEATING ENGINEERS AT ATLANTIC CITY.

Already there is a good showing of the members of the American Society of Heating and Ventilating Engineers at Atlantic City—President A. E. Kenrick, Secretary W. M. Mackay, John Gormly, P. Gormly, Frank K. Chew, James H. Davis, H. A. Smith, W. H. Switzer, John C. F. Thrachsel, Enoch Rutzler, Henry L. Hall, James Curran, A. N. Chambers, Frank Dobson, W. H. Clark, A. B. Franklin, P. H. Kendricken and Stewart A. Jellett. The affairs of the society have been discussed with interest and there is a feeling of confidence in its growing importance. The tenth anniversary idea of Andrew Harvey evidently is a popular one, and although little has been accomplished as yet, the suggestions made show that it is an opportunity for good work. The meeting of the society on Monday will be well attended, and doubtless will interest some of the guests in its work as well as secure their support.

THE MASTER PLUMBERS ARRIVING.

The first of the master plumbers to arrive were the members of the Executive Committee and the officers. Thomas F. Gaynor and Mrs. Gaynor came on Wednesday, and in the evening ex-President P. Tierney and Miss Sarah Tierney. Later T. J. Young and Fred Fox, Jr., arrived. On Thursday President E. D. Hornbrook, Vice-President Chas. Polacheck, George Kirchoff, J. J. Foy, L. Poplowski, Treasurer W. E. Goodman and Executive Clerk W. E. Crosby arrived. They were received by V. B. Giffen, C. T. Schroeder, M. H. Towhey, L. E. Freeman and N. Cogan of the Atlantic City Association, who are a general committee to lend any assistance needed. Immediately matters of convention and of business relating to the conference were under consideration. The convention of next week gives promise of being a big one. There are several interesting matters for attention that will give it special importance.

West Virginia Master Plumbers.

At the meeting of the Master Plumbers' Association of West Virginia held at Parkersburg on Thursday, June 5, the following officers were elected for the ensuing year:

President, Robert W. Kyle of Wheeling.

First Vice-President, Charles H. Turner of Parkersburg.

Second Vice-President, S. H. Meyers of Charleston.

Secretary and Treasurer, William Hare, Jr., of Wheeling.

C. H. Turner of Parkersburg and F. D. Jones of Fairmont were chosen as delegates to the National Convention. The next meeting of the association will be held on the third Thursday in February next, at Wheeling.

TWENTIETH CENTURY PLUMBING.

Even as the twentieth century builder erects an iron skeleton and then incloses it in brick work and fills in the partitions, the plumbing trade has its representative on the job, who runs the service, waste and drain pipes before the iron work is completed. When Kiralfy wished to give a spectacular reproduction of the battles of Manila and Santiago in the Madison Square Garden, and did not desire to pay rent for several months in order to have the first floor of the garden made one immense water tank, the plumbing trade generally found no attractions in the contract that he had to offer, when the time limit was considered. The lining of that great tank with sheet lead in a comparatively few days made John W. Cooney of 355 West Twenty-sixth street, New York, well known to the plumbers throughout the United States, for the tank was not only the largest that had ever been built, but was completed on time, without leaks. The same enterprise for completing large undertakings in a short time has secured for Mr. Cooney the contract for plumbing the new building at Thirty-fourth street and Broadway, New York, which is being erected for R. H. Macy & Co. by the George A. Fuller Company, who have attracted attention by their large undertakings in contracting to furnish complete in a short time immense many story buildings all ready for occupation.

ADVANCED METHODS.

Mr. Cooney has employed methods in his plumbing business that are unique, interesting and successful. In conducting such large operations, he studies the plans and makes special detailed plans and elevations for all the plumbing work to be done, which are given to the foremen in charge, who distribute them among the journeymen, so that they need little supervision, but are required to work exactly to sketch. A clerk is placed on each large job to receive the goods that come in from the various houses supplying them. Heretofore all pipe, of whatever size, required on a job was ordered to be cut to sketch and tied in bundles with marks, so that when received it could be sorted, and when the journeyman was given his sketch in the morning he could be provided with all the materials he would require to complete his work for the day. This plan has enabled Mr. Cooney's workmen to run up the piping in a building as fast as the skeleton iron frame work is put in place. Thus the mechanics who put up the partitions, the carpenters, plasterers and all the other workmen are enabled to fit up to the plumbing work, saving them time and expense, and also time and expense to the owner.

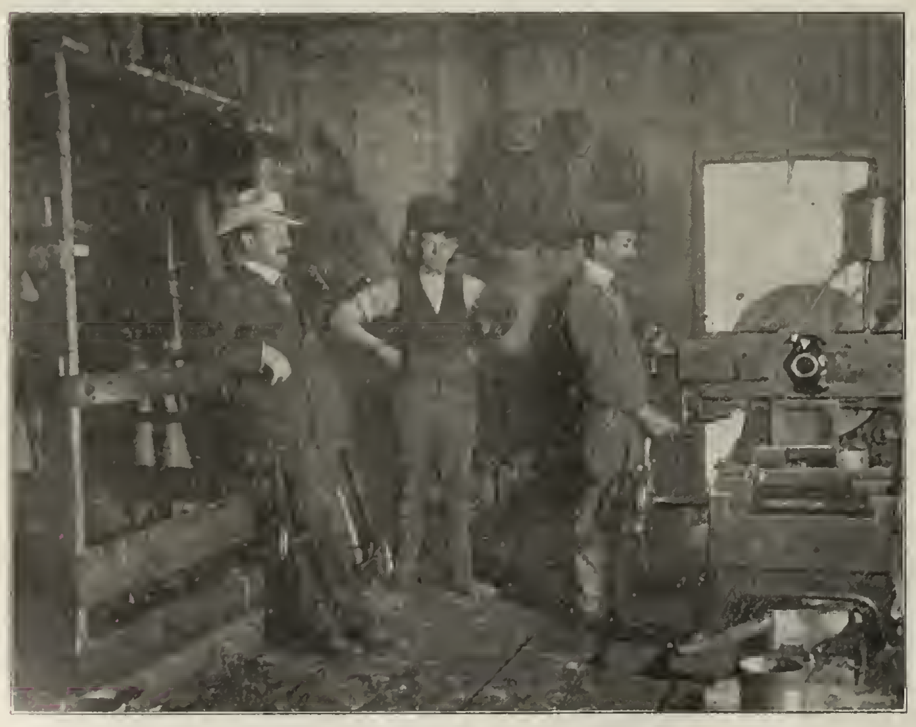
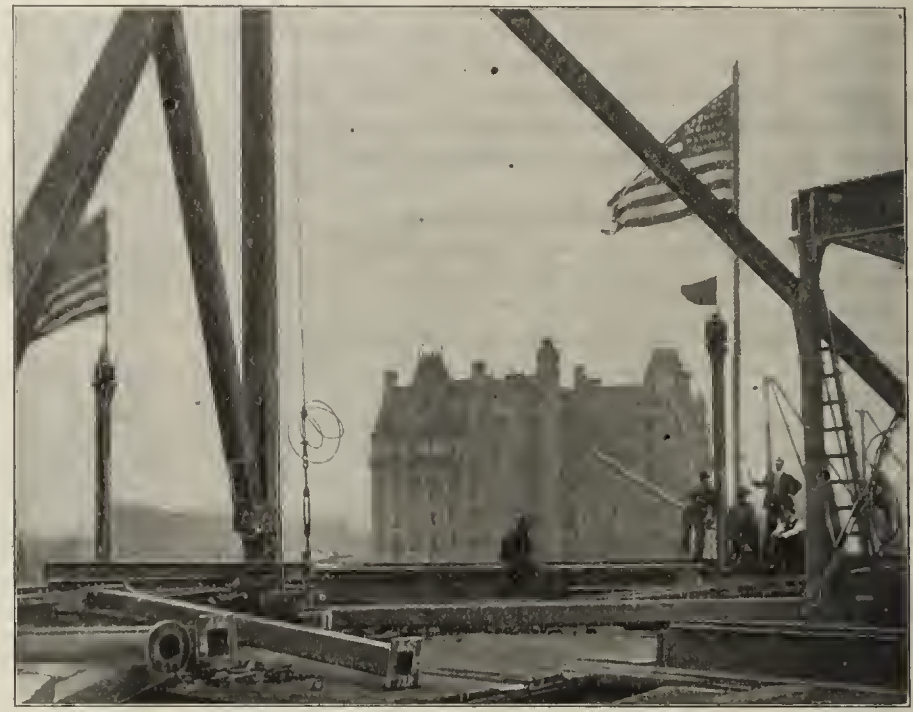


Fig. 2.—Electric Pipe Cutting Plant.



Twentieth Century Plumbing.—Fig. 1.—The American Flag Ahead.

CONTEST TO REACH THE TOP FIRST.

The plumbers who have worked for Mr. Cooney have become expert in this class of work, and at the Macy building a friendly rivalry sprang up between the plumbers and the iron framers, to see who should get to the top of the building first. The building is nine stories in hight, and when the ninth floor was reached the iron frame men were slightly ahead. They ran up at the top of one of the columns the green flag, so dear to the sons of Ireland, but before the roof line could be reached the plumbers were well ahead with their piping, and one of the pipes passing through the roof above the column bearing the flag of the iron framers was used as a staff on which to run up the American flag. The flag is shown in Fig. 1 of the accompanying illustrations, occupying the space above all others, which the plumbers' spirit and enterprise have enabled it to reach.

THE PLUMBING EQUIPMENT.

The building, when completed, will contain 600 plumbing fixtures, including shower baths, bathrooms and toilet rooms. Naturally, in so large a building, equipped with elevators and having so much machinery as is necessary in department stores these days, the engine and boiler room is in charge of several men, and the engineers have a special private bathroom, with shower bath. There is also a special bathroom, provided with showers, for the officers of the company. In addition there are eight shower baths in the various toilet rooms for the employees and in the emergency sick rooms, provided on the different floors. The building is furnished with a large restaurant, also an elaborate kitchen, with a complete system of plumbing. On the ninth floor is a fountain supplied with water from a tank on the roof, and the waste water from this fountain supplies a fountain on the seventh floor. The building is equipped with both a refrigerating and an ice making plant, and drinking fountains are located at numerous places on the different floors, the water being cooled by being continually pumped through brine tanks. The water supplied to the building passes through two 8-inch Loomis-Manning filters.

THE PIPING.

So many fixtures necessitate a large amount of pipes, there being eight 8-inch sewers leading from the building and four 4-inch water supply mains connected with four pumps leading to a number of tanks having an aggregate capacity of 50,000 gallons. The water is distributed from the tanks through a series of down mains connected with a 7-inch distributing header on the top floor. Hot water is supplied to all the various toilet rooms, bathrooms, &c., from a water heater in the cellar. The hot water main leads directly to the top of the building and runs to distributing down mains, which connect in the cellar and lead back to the heater, so that a continual circulation is kept up. The drainage system is composed of galvanized wrought iron pipe with recessed fittings.

ELECTRIC PIPE CUTTING PLANT.

Mr. Cooney is under contract to complete this work in August, although it was only begun in April. In order to have the best facilities under his own control for getting out the piping, instead of ordering it cut to sketch at the mill as heretofore, he equipped the pipe cutting and threading shop shown in Fig. 2. At the left of the picture is an electric motor, from which belts run up to shafting on the ceiling, and connect to a Saunders pipe cutting machine, having a capacity for cutting and threading pipe up to 8 inches in diameter. This shop is in charge of a competent pipe machine man, and is run to the best advantage of the plumbers working upon the building. A blackboard is provided in this shop, on which the orders from the different workmen are recorded, and the pipe got out at the earliest possible moment.

COLLECTING THE MATERIAL.

Although the work was only started in the latter part of April, already, on the 7th of June, 245 tons of wrought iron pipe and $7500 worth of cast iron fittings had been installed in the building. In order that so much pipe and so many fittings and supplies should be secured promptly, so that there should be no delay in the work, Mr. Cooney employed a special man to travel among the various pipe mills and supply factories where he had placed orders, to see that the goods were shipped and then notify Mr. Cooney of their shipment. When special material had been needed urgently, advanced prices have been paid for material already packed for shipment to other parties, in order to have the material unpacked and shipped to New York for this particular work.

THE WORKING FORCE.

The crew for working on the building is composed of 50 journeymen, 50 helpers, 1 general superintendent, 1 foreman, and 1 foreman helper. The superintendent and foreman have been given *carte blanche* to employ all the men needed to keep the plumbing work ahead of all other work, regardless of expense. This has resulted in the entire crew developing *esprit de corps*, which enabled them to pass their work through the roof first and establish their much-loved star spangled banner at the place where it belongs—at the head of the heap. In addition to the working crew, the timekeeper is one of the important members of the clerical force, who have such complete mastery of the details as to be able to tell when a certain fitting or material will be needed, where it has been ordered, and at what point it may be —either in transit, on the dock, or on trucks, on its way to the building.

HANDLING THE MATERIALS.

This building, which is 200 x 500 feet, and nine stories in hight, and is to be completed and ready for use as a department store in August, is progressing so rapidly as to approximate the mushroom growth so often spoken of. Yet, while a veritable hive of industry, it is absolutely free from confusion. To better facilitate its construction the Fuller Company have erected in the basement, near to Mr. Cooney's shop, a complete electric generating plant, from which he secures the electricity needed for his motor. The Fuller Company also have all the necessary derricks for handling their material, and for a small charge handle heavy materials received by other contractors. When a truckload of 5 tons of wrought iron pipe reaches the buildings it is drawn into the building by means of the power plant and one of the derricks is used to lift off the 5 tons of pipe and put it at the desired spot, for the use of Mr. Cooney's men, just as easily and readily as one man would handle one length of small sized pipe.

THE PNEUMATIC SWEEPING SYSTEM.

Another feature of the equipment of the building, for which Mr. Cooney is running the piping, is a vacuum sweeping system. Pumps and machinery are provided in the basement for creating a vacuum in two tanks, one of which is a settling tank, in which a spray of water separates the dust drawn in from the air and prevents the dirt from clogging the apparatus. Pipes from these tanks lead to various points on the different floors, so that each pipe, with its hose connection, takes care of about 100 square feet of floor space. At the end of the hose is a special device for drawing in the dust, consisting of a short piece of pipe leading to a tee. At the bottom end of the tee is a short cross section of pipe slotted so that there is a continual inward suction, and when passed over a floor or piece of carpet it draws in all the dust on the floor or carpet, without creating any dust and leaving the nap of the carpet standing straight.

Plumbing work of this character, for so large a building, done under such conditions in such a short time, and conforming to every sanitary requirement, is radically different from the plumbing in which the old timer found so much delight, when every joint was wiped, and he had ample time to beat up his work, as well as enough time to work in some elaborate ornamentation.

The No. 35 Gasoline Torch.

We present herewith an illustration of the No. 35 torch made by the Clayton & Lambert Mfg. Company, Detroit, Mich., which they have just placed upon the market. This torch is of 1-pint size, and is of the most modern and improved construction in every respect. The tank is drawn out of heavy brass, free from seams, and all fittings are heavy, reinforcements being used to make the tank extra strong. A brass air pump of the latest design forms part of the handle. The burner produces a strong blue flame, consuming very little gasoline. In fact, the manufacturers claim that the user will soon save the cost of the torch in the saving of gasoline. The company's improved double shouldered needles are used in this torch, making durable burners. As will be seen from the cut, the burner is mounted on a swivel joint, so that the flame can be blown in any direction. The No. 35 torch is thoroughly well made, and though strong is light and well balanced, easy to handle, and always ready for use. It is adapted for the use of plumbers, tinners, painters and electricians.

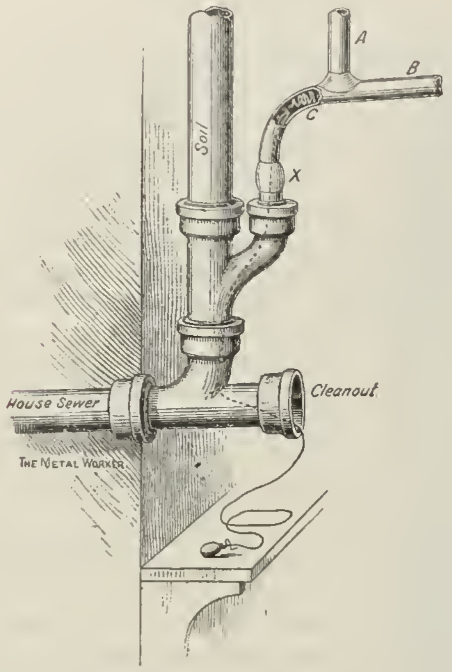
The No. 35 Gasoline Torch.

FRED. A. PARKS and A. P. STEWART have been granted plumbers' licenses, at Old Town, Maine.

DRYING PIPE BEFORE WIPING JOINT.

BY HELMAR.

The value of a plumber's services to his employer depends largely upon how rapidly he can get along and at the same time do good work. The sketch herewith shows a scheme that has saved many hours of worry and work over trying to make joints on wet pipes. If a joint, as at X, or the bend, gives way, or a new waste is to be branched into an old lead waste, there is usually trouble in getting the pipe dry, and, as there is no pressure on the waste pipe to blow out bread plugs, the plumber must be careful as to what means he employs to keep the water back. The interior of old waste pipes is always slimy and harbors more or less water from end to end, which will trickle down, make steam, cool the solder, blow it off and make the poor plumber miserable. Incidentally he uses all his solder without getting up a heat, has to reheat the pipe and burns the face off of his coppers trying to melt the cold solder off by the time the pot gets hot. And it is likely he has no solder to heat until he melts it off of the pipe with the iron.



Drying Pipe Before Wiping Joint.

The writer's plan is to take a long strip of strong, dry rag, attach it to a string with a lead "mouse" on the end, drop the mouse in at the branch hole or where the joint is to be rewiped and fish it out at the clean out. The rag strip is then folded back and forth, as indicated at C. It should be folded about the size to make a plug that will push into the pipe tight, but which will come out easily by pulling on the string at the clean out. The rag plug is then shoved into the pipe tail first and pushed up above the point at which the joint is to be made. The waste should be swabbed out with a cloth on a wire as far up as possible before putting the rag in. The plan will hold water back in pipes A and B, no matter how long they are, unless a regular deluge is turned loose at one of the fixtures, a mishap which there is some chance to guard against. In this way the joint is as easily wiped as on new pipe, and the rag and string come out as easily as though it was a straight string.

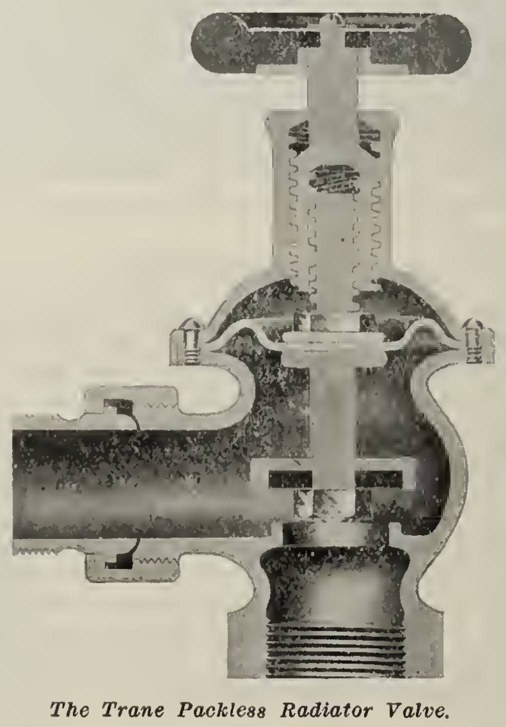
Pushing the Thatcher Line.

The Thatcher Furnace Company, 240 Water street, New York, are not waiting for the busy tradesman to stumble over the good things presented in the Thatcher line, but are making direct appeals that are well calculated to secure his attention. The following copy of one of their letters shows how a clever correspondent can awaken interest in his goods while attending to the thousand matters that gather around the desk of an industrious man who has command of all the details of his business:

> Do you wish to increase your business? We can help you. Are you using the right line of goods? Just think it over for a moment.
>
> We cannot understand why you are not using the Thatcher line of furnaces, ranges, steam and hot water heaters. Goods that are easily sold because they have real merit and established reputation.
>
> They are known to be of superior construction and workmanship, beautiful in design and efficient and economical in operation. Thousands of successfully heated homes attest this. Dealers handling them are making money and steadily increasing their business. It is your fault if you are not doing the same.
>
> As manufacturers, we sell only through the trade and do no construction work or installing whatever, thus protecting the interests of our customers—remember this.
>
> Our prices will enable you to meet all competition and you will be accorded fair treatment.
>
> These are hard facts which should appeal to your good business judgment. Our next letter will give more reasons why we are entitled to at least a portion of your business.
>
> Write us now for prices and further particulars. You will receive a prompt and helpful response.

The Trane Packless Radiator Valve.

In the accompanying illustration we show what is designated by the manufacturers as a practical radiator valve, being constructed with a right and left hand thread spindle and diaphragm, thus doing away with the ordinary stuffing box, which usually is the cause of great annoyance to the steam fitter. This feature will be especially appreciated by those interested in vacuum heating. The inventor believes that the valve is one of the first, if not the first, packless radiator valves placed on the market. It is claimed to be thoroughly practical and durable. The manufacturers are the James A. Trane Vacuum Heating Company, 42 Dearborn street, Chicago.



The Trane Packless Radiator Valve.

Journeymen Steam Fitters.

The National Association of Journeymen Steam and Hot Water Fitters, at their convention in Philadelphia last week, elected the following officers:

President, T. C. McCormick of Yonkers, N. Y.

Secretary and Treasurer, V. L. Onstatt, Chicago, Ill.

Member of Executive Board, J. N. Coughlin, Boston, Mass.

PETER MILNE, Water Purveyor of Brooklyn under Mayors Low, Schieren and Wurster, and Chief Engineer of the Brooklyn Water Department under the last named executive, died on Monday, June 9, at his home, 32 St. James Place, Brooklyn. Mr. Milne was born in that city 65 years ago, and for many years was associated with his father in the plumbing business. For the last few years he had acted as consulting engineer for a number of contractors. He was a member of the American Society of Civil Engineers, and was connected with several trade and social organizations. He leaves a widow, three daughters and one son.

New York City Notes.

Contracts still continue to be given out, and now that the wage question is settled, the trade are on a better foundation to figure. Among the jobs lately given out is an apartment at 236-238 West Fortieth street, to be done by Wm. V. Gordon; James Patten has two private houses at 155-157 East Fifty-seventh street; Frank Woytisek has an apartment on 112th street, between Amsterdam avenue and Broadway, and Habeck & Fajens of 773 Melrose avenue have seven private houses on 209th street, near Amsterdam avenue. T. A. Klenke began work on an apartment on 127th street, between Lenox and Fifth avenues; also one on Forty-sixth street, between Fifth and Sixth avenues.

* * *

John McMillan is busy with overhauling the plumbing in the Brooklyn post office. He has been hampered in this job on account of a strike against so-called nonunion marble, but work is again progressing.

* * *

The boys employed by Milton Schnaier on the Ansonia struck last week for an increase of wages, and as a consequence most of them are now looking for a job.

* * *

The New York delegation to the convention will have with them, as delegates and guests, Hon. P. M. Stewart, Superintendent of the Bureau of Buildings of the Borough of Manhattan; P. J. Andrews, Chief Plumbing Inspector; Alderman T. F. McCaul; James G. Collins, Superintendent of Highways of the Borough of Manhattan, and William Montgomery, president of the Examining Board of Plumbers.

* * *

The Tracy Plumbing Company have fine new quarters at 216 West Twenty-third street, and are busy getting out the Ellis subdrain lifts for the stations on the rapid transit railroad.

* * *

The New York train for Atlantic City leaves by way of the Central Railroad of New Jersey from the foot of Liberty street, Manhattan, at 3 p.m. sharp on Monday, the 16th inst. Baggage should be marked care of Master Plumbers' Special.

Heating and Plumbing Notes.

President Lynch of the International Metal Polishers' and Brass Workers' Union is authority for the statement that a co-operative company will be formed by the metal polishers and brass molders who are on strike in Cleveland, with a view to competing with Plumbing Supply shops where men are on strike. The International Union is expected to take between $5000 and $10,000 worth of stock, and the remaining stock will be sold to workmen at $10 per share. It is stated the matter is now before the Executive Board of the International Union.

The Memphis Association of Master Plumbers is the name of a newly incorporated body at Memphis, Tenn. The incorporators are: L. Tisdale, Edward McGowan, Harris L. Browne, Edward L. Rawlings and B. P. Stanton. The association has a capital stock of $1000.

The County Commissioners at Great Falls, Mont., have awarded the contract for heating the new Court House to C. E. Wentworth of Butte, Mont., and Minneapolis, at his bid of $10,500.

Oliver & Howland are now in their new establishment at 214 Worthington street, Springfield, Mass., where they are making a fine display of Bathtubs and their equipment and Lavatory Fixtures. They show a bathroom completely furnished with the latest design of Fixtures and Trimmings.

Recent callers at the office of the Curtis & Curtis Company, Bridgeport, Conn., have admired the beautifully engraved certificate setting forth that a medal was awarded to the company for their exhibit of Pipe Threading Machines at the Paris Exposition in 1900. The certificate was lately received from the United States Commisioner to the Exposition, and has been handsomely framed.

Bids will be received until June 17 by Joseph H. Key, secretary of the Board of Trustees of St. Mary's Female Seminary, Leonardtown, Md., for the heating plant for a three-story brick building, 75 x 30 feet.

The Alton, Ill., Board of Education has awarded the contract for plumbing the High School Building in that city to the Alton Plumbing & Heating Company, and the heating contract to the Keer Construction Company of Belleville, Ill.

F. W. Barclay, Beatrice, Neb., bid $15,000 and secured the contract for plumbing the City Hall at Colorado Springs, Col.

The *Republican* of Cedar Rapids, Iowa, reports that there is a movement on foot at Waterloo, Iowa, to unite the master plumbers of the city into a stock company to carry on a supply business.

The Hewitt Plumbing & Heating Company of Grand Rapids, Mich., have applied to the City Council for an immediate re-examination to secure master plumbers' licenses, they claiming to have secured a credit of 100 per cent. on practical work.

The warehouse of the Sumner & Goodwin Company, at 289 Congress street, Boston, Mass., containing Plumbing Supplies and Materials, was recently slightly damaged by fire.

The School House Commissioners of the city of Boston, Mass., have invited proposals for installing a plumbing system in the Quincy School on Tyler street, Boston. Bids must be sent to the office of the commissioners in the Walker Building, 120 Boylston street, Boston, not later than noon of June 16.

The Library Board of Miles City, Mont., have let the contract for the plumbing and heating of the library building in that city to Miles & Ulmer at their bid of $1366.

Sealed proposals will be received until June 20 by the Building Committee of the Board of Supervisors of Jefferson County, N. Y., at the office of D. D. Kieff, Flower Building, Watertown, N. Y., for the plumbing, heating and ventilating of the new County Court House, now being constructed in that city.

A delegation of master and journeymen plumbers of Seattle, Wash., recently waited on the local Board of Health to ask that Plumbing Inspector McIntyre be given one or more assistants, to enable him to keep up with his work. The plumbers claim that at the rate at which houses are being erected in Seattle it is a physical impossibility for Mr. McIntyre to inspect the plumbing work, and therefore the work of building is often delayed. In support of their claim the plumbers cited the fact that San Francisco has one plumbing inspector and six assistants, while there are two-thirds more buildings going up in Seattle than in San Francisco, with only one man to inspect the work in the former city. The board promised to consider the application.

The Burley Heater Company, Tyrone, Pa., were reorganized on April 19 with new capital. The president is William H. Denlinger, vice-president James H. Alports, and secretary D. S. Kloses. An additional building is being erected by which the output of the concern will be largely increased. It is said that water power far beyond requirements can be had from the Juniata River and sand necessary for molding is found near the works on the property of the company. Their leading product is a Sectional Boiler, suitable for steam or water, and is made in three series. It is adaptive to either a severe or moderate climate, and has proved satisfactory to purchasers as far East as Bangor, Maine; West as Independence, Wis., and South as Asheville, N. C. The company are anticipating a greatly increased sale for their Boiler. Two illustrated catalogues will be issued within a few days.

The prolonged strike of plumbers in Washington, D. C., has been settled, and the men returned to work on Tuesday. The terms of the settlement provide for two helpers to every three plumbers. The strike was based on the question of helpers, the men asking for the abolition of helpers, while the master plumbers claimed the right to employ as many as they wished. In the agreement apprentices are looked upon as journeymen. The strike has run for more than nine weeks.

The Board of County Commissioners of the county of Randolph, Ind., will receive sealed bids until June 21 for furnishing the material and installing the plumbing in the County Court House at Winchester.

Sealed proposals will be received until June 20 for furnishing and installing a plumbing system in a school house at Springfield, Mass. Plans and specifications for the same may be seen at the office of the architects, E C. & G. C. Gardner, 33 Lyman street, Springfield.

The School Board of Van Buren, Ark., have decided to put a steam heating plant into the public school building in that town.

Over 3000 tons of Iron Pipe were exported last month via Eastern ports by the National Tube Company, being an increase of nearly 50 per cent. as compared with the company's exports made during April. Europe was the most important purchaser, 2016 tons having been shipped there.

The Southern Sewer Pipe Company, Chalifoux Building, Birmingham, Ala., will shortly be in the market for an electric light outfit, tank and fire protection equipment and belt power elevator. The company are erecting a large terra cotta sewer pipe plant at North Birmingham, consisting of a main building, 61 x 301 feet, three stories, of frame construction, with single story addition, 40 x 96 feet, and a brick and iron power house, 40 feet square, in which will be installed a 250 horsepower Corliss engine and four 100 horse-power boilers, which have been purchased. The special machinery was purchased from Taplin, Rice & Co. of Akron, Ohio. The plant will include 20 30-foot down draft kilns and will have a capacity of 100 cars per month.

The Pressed Steel Tank Company, Milwaukee, Wis., recently incorporated with a capital stock of $100,000 by Robert H. Hackney, Frank G. Bigelow and George C. Markham, have purchased the entire plant, equipment, accounts and business of the Seamless Structural Company.

The Buffalo Forge Company, through their New York office, closed a contract with the New York Edison Company involving 16 large Fans, to be used in connection with forced draft apparatus at the new Waterside station.

The Davis-Hansen Company, Oshkosh, Wis., are manufacturers of Iron Pumps, Cylinders, &c. The company also job Pipe, Fittings, Tools, Well Supplies, &c. Among goods recently added to their line of manufactures are Brass Body Pitcher Spout Pumps, Pipe Holders and Lifters, Brass Body House Force Pumps, and Long Fulcrum Lift and Force Pumps.

The American Tool Chest Company, 200 West Houston street, New York, have just put on the market a new line of Machinists' and Pipe Fitters' Tool Chests. These Chests are made in a number of styles and sizes.

The John Davis Company, Steam Fitters' Supplies, Chicago, Ill., who have been located at 75 Michigan street for a number of years, will erect a plant, costing $200,000, at Twenty-second and Halsted streets, and upon completion will transfer their business to the new location. The works will comprise a warehouse at the southeast corner, four stories high, with ground dimensions of 167 x 256 feet; several buildings, including machine shops, power house and sheds, will occupy a frontage of 250 feet on Twenty-second street and 570 feet on Union street. Next this property, but separated from it by an 18-foot driveway, a large warehouse will be erected for Burley & Tyrrell. It will be five stories high, of mill construction, and will cost about $90,000.

The contract for the plumbing of the High School at Greene, N. Y., has been awarded to F. E. McCormack & Co. of Lestershire, N. Y. They will use the fixtures manufactured by the L. Wolff Mfg. Company of Chicago.

P. B. Oakley, for 15 years associated with the Pease Furnace Company of Syracuse, N. Y., and who has been with the International Heater Company since their organization, has now made a business connection with the Eckerman Hardware Company, 1026 Lorain street, Cleveland, Ohio. The company's plumbing and heating department will be greatly enlarged under Mr. Oakley, who is well known by the trade throughout Ohio and the Ohio River towns of West Virginia.

The Keystone Valve & Mfg. Company, recently organized in Pittsburgh, Pa., will build a large plant for the manufacture of Valves and Light Machinery. A number of sites for the location of the plant are under consideration, but no definite selection has yet been made. The officers of the company are J. D. Riley, president, and William A. Larimer, secretary and treasurer. These, with Stephen McKay and M. O. Schooley, compose the Board of Directors.

J. H. Seacord & Co., Lincoln Place, Pa., have removed their plumbing shop to a new building on Marion avenue, where they expect to make a better display of their line of goods.

Bids will be received until June 18 for plumbing the City Hall of Newark, N. J.

Rourke Bros., New Haven, Conn., have closed the contract for the steam fitting, air piping and plumbing in the new Lion brewery in Allington, Conn. The cost of the work will be between $9000 and $10,000.

Bids are being invited for furnishing 1500 ⅝-inch water meters for the San Juan Water Works, Porto Rico.

We have received from President E. D. Hornbrook of the National Association of Master Plumbers, from the headquarters in Kansas City, Mo., the sixth edition of the "Directory of Recognized Master Plumbers," revised to June 1. This issue of the Directory contains practically four more pages, indicative of an increase in membership to the National Association during the last month.

The Crane Company of Chicago, Ill., whose New York offices are at 490-502 Cherry street, have recently shipped ten carloads of Pipe and Fittings to East London, South Africa, for use in the mining district near Johannesburg.

J. Reilly, Jr., has removed his plumbing establishment from 251 State street to 283 State street, Bridgeport, Conn.

The Walker & Pratt Mfg. Company, Boston, Mass., are sending to the trade a mailing card showing broken views of the 15 and 20 Series Walker Vertical Sectional Boilers, and general views of the Crawford Steam and Hot Water Boilers. The company offer to send further information in reference to these Boilers on application.

New Firms and Changes.

Leon P. Page & Co. have opened a plumbing and tinsmithing establishment on Main street, Indian Orchard, Mass.

P. L. Lyons has arranged to go into the plumbing business at Montpelier, Vt.

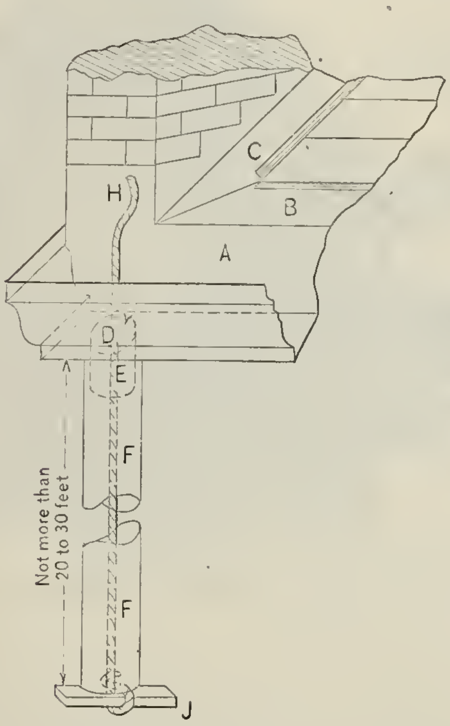
H. M. Cawley succeeds the plumbing firm of Kelley & Cawley, at Peabody, Mass.

The Sterling & Skinner Mfg. Company, Detroit, Mich., recently organized with a capital stock of $25,000 for the manufacture of Brass Goods for Steam, Water and Gas, are erecting a two-story brick factory 50 x 100 feet, which will be equipped with latest improved machinery, an 80 horse-power engine, and a 100 horsepower boiler. It is expected that the plant will be ready for operation by July. The officers are R. R. Sterling, president; E. J. Roney, vice-president; F. G. Skinner, secretary and treasurer, and J. F. McDougall, superintendent.

The Steele & Robinson Company, who have recently been incorporated at Williamsport, Pa., with a capital of $50,000, will remodel the plant formerly used for making the Backus Heater to suit their business. They will engage in the manufacture of Gray Iron Castings, Radiators and Steam and Hot Water Heaters, and expect to employ 50 men. George P. Steele has been elected president and general manager, and will have charge of the business and reside in Williamsport. William J. Robinson is the secretary and treasurer, and will have charge of the office and salesroom in Philadelphia.

PUTTING UP CONDUCTOR PIPES.

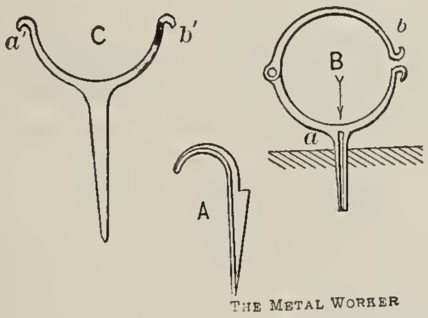
While the method here shown may not be new to some of the older members of the craft, it may, however, prove of interest to younger workmen and future mechanics, for whom it is intended. In putting up conductor pipes or leaders, where a foothold can be had on the roof, the gutter A in Fig. 1 is first put in position, flanged over on the roof B and connected with the wall flashing C. Assuming that a 5-inch pipe is required, cut a 5-inch circle through the bottom of the gutter, as shown by D, and solder into it a tube about 8 inches long and 4⅞ inches diameter, as shown at E. Let us suppose that the distance from the gutter to the ground is 50 to 60 feet. Then take three lengths of pipe, each length being 10 feet, and solder them together well, making 30 feet in one length. Now lower the rope H from the roof through the tube E to the ground, and pass it through the pipe F F by fastening a weight to the end of the rope; then tie a strip of wood, J, to the rope, as shown.



THE METAL WORKER

Putting up Conductor Pipes.—Fig. 1.—Method of Putting up the Pipe.

The rope is now slowly drawn up, being careful to support the pipe in the center as it is being raised, so as to keep it from breaking, until it has reached a vertical position; when it is drawn up tight against the bottom of the gutter. Then, from a nearby window, ladder, or sitting scaffold, the leader hook A in Fig. 2 is used to fasten the pipe against the wall, when the rope can either be dropped through the leader in Fig. 1 or the wooden strip J unfastened and the rope drawn up. When the hinged hook B in Fig. 2 is employed the hooks must be driven into the wall before the leader is put up.



THE METAL WORKER

Fig. 2.—Three Different Kinds of Hooks.

Care must be taken that each hook is directly above the one under it to keep the leader in a plumb line. This is accomplished as follows: Mark the center of the back of the tube in the gutter, as shown by the arrow in Fig. 1. From this point drop a plumb line through the tube and drive the hook B in Fig. 2 so that the line will come in line with the arrow point in hook B, being careful that all hooks project the same distance (*a*) from the wall line. This being done, the leader is placed in position, the front half of the hook closed, and the two small clasps fastened with wire and plyers at *b*.

The same instructions apply to the hook C, to which, however, the leader is fastened by hooking a wire at *a'*, passing it around the front of the leader and fastening at *b'*. In driving these hooks a ladder or sitting scaffold is usually employed.

◆

Of Interest to Metal Roofers.

The New York Iron Roofing & Corrugating Company, Jersey City, N. J., have issued a new illustrated catalogue of 96 pages, covering their line of steel roofing and siding, roofing materials, &c. The catalogue is of handy size, 8 x 9 inches, is well printed and illustrated and is inclosed in a violet cover artistically decorated. Among the goods shown in this publication are pressed, standing seam, V-crimped and roll cap roofing, corrugated, oval and corrugated Diamond siding; corrugated awnings, corrugated ceilings, cornice gutters, down falls, window and door caps, sheet metal clapboarding and steel pressed brick and rock faced siding. These goods are manufactured from the first quality of sheet steel, either black or galvanized, and are recommended by the manufacturers as suitable for buildings of every description. A number of pages are devoted to illustrations showing the method of applying iron roofing to roofs of various styles and pitches; also rules of measurement for roofing materials and a number of tables of weights and measures, which will be found useful to the roofer.

Among the goods presented further along in the catalogue are sheet iron angle forms, corrugated combing cap and flashing, cornices, ceilings in the Empire and Colonial styles, corrugated copper and zinc sheets, bas relief plates and stamped side wall panels. Special attention is called to Sagendorph's Obelisk metallic paint, which the makers claim to be especially adapted for use on metal roofs, having remarkable qualities as a preservative of metal. Obelisk iron cement is another product of the concern, which is recommended for the use of those undertaking roofing work. The company also manufacture and furnish a large line of roofers' tools, including shears, snips, seamers, mallets, squeezing and edging tongs, brushes, trowels, hammers, &c. Their Cluster steel shingles for mansard roofs and siding are illustrated and described with full directions as to their application. The closing portion of the work is occupied by galvanized steel headers, O. G. hanging gutters, eave trough, eave trough miters and ends, corrugated expanding conductor pipe, conductor hooks, elbows and shoes, and the Chautauqua eave trough hanger. A view of the company's factory at First and Washington streets, Jersey City, N. J., occupies the back cover. They have also recently issued a large illustrated catalogue of their steel ceilings and side wall coverings.

The New York Iron Roofing & Corrugating Company advise us that, in the past six months, they have increased the facilities for turning out sheet metal goods at their Jersey City works. Among recent additions and improvements to their equipment is a new gas engine, a large new corrugating machine of the latest improved design, new corrugating and curving rolls and a number of new crimping machines. They have also put up a quantity of new shafting, pulleys, &c., and have increased their capacity for painting sheets.

◆

We understand that the Automatic Closing Fire Proof Window Frames and Sash, which are made under H. Collier Smith's patents by the Smith-Warren Company of 93 Federal street, Boston, Mass., and 253 Broadway, New York City, have been specified for the Chelsea Telephone Building, to be erected in New York City in accordance with plans drawn by Silas L. W. Eidlitz, architect, with offices in the Townsend Building, that city.

Artistic Sheet Metal Work.

The use of sheet metal for decorative purposes is increasing very rapidly and a growing number of concerns are devoting their efforts to the production of artistic work in this line. The Edwards Mfg. Company, makers of architectural and ornamental statuary, sheet metal work and zinc, copper and spun work, with offices at 119 Sycamore street, Cincinnati, Ohio, and factories in that city and at Covington, Ky., are turning out some exceptionally handsome designs in this line. We present herewith three examples of the work of this concern. In Fig. 1 is given a representation of the crest of the State of West Virginia, stamped out of copper, for the Capitol Building at Charleston. This design is further embellished with a scroll, which, however, is not shown in the picture. The design measures 4 feet 4 inches by 10 feet 6 inches, and is regarded as an unusually fine piece of workmanship. The panel shown in Fig. 2 is 6 feet square and is stamped in bold relief out of zinc and copper. It was specially designed for a large structure in Pittsburgh, Pa., and is a very handsome piece of ornamental work. Fig. 3 is a pedestal surmounted by a bust of the late President McKinley. This is made entirely of sheet metal and, as the engraving indicates, is as artistic a piece of work as can be produced in this material. The company report that they are extremely busy on work of this character at the present time, and have a large number of orders on their books.

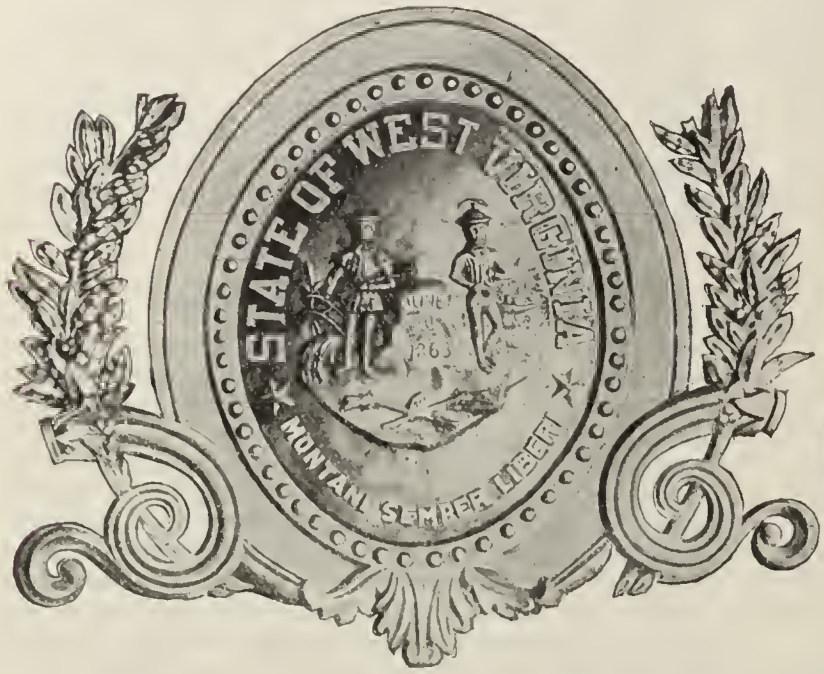


Fig. 1.—Crest of State of West Virginia in Sheet Copper.

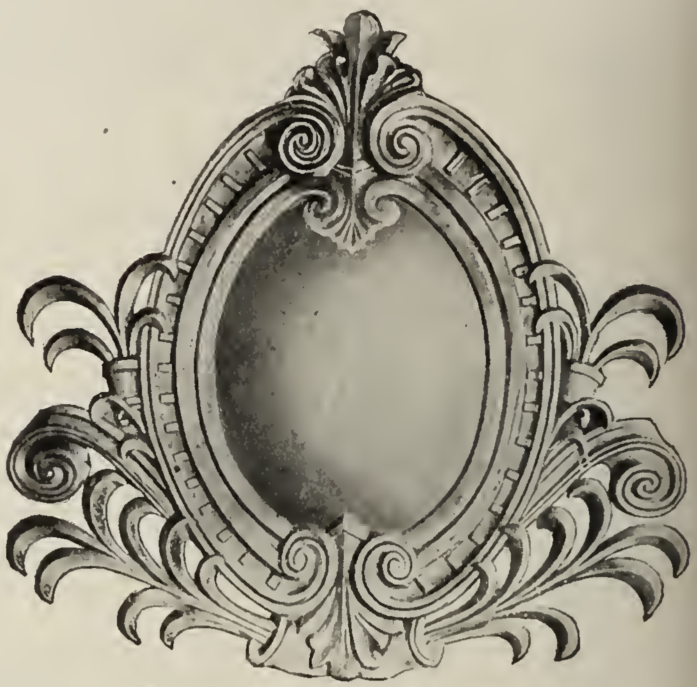


Fig. 2.—Zinc and Copper Panel.

Artistic Sheet Metal Work.

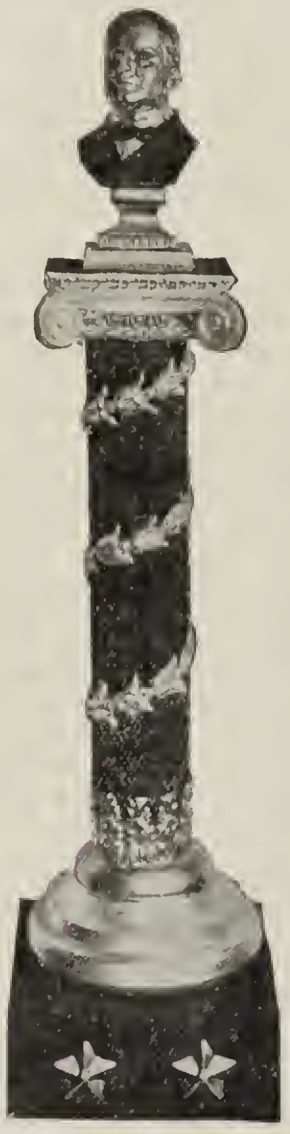


Fig. 3.—Sheet Metal Pedestal and Bust.

Metal Shingles and Tiles.

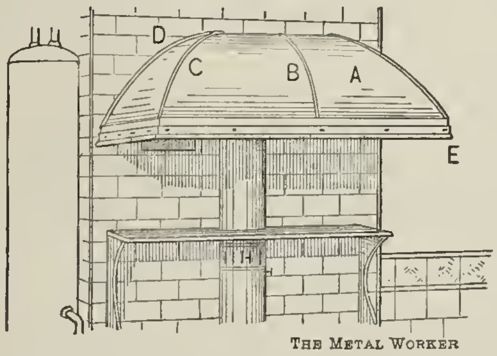
The Montross Metal Shingle Company, Camden, N. J., have favored us with a copy of their latest catalogue and price-list, illustrating the company's metal shingles, tiles and roofing sundries. The publication is composed of 36 pages printed in two colors and profusely illustrated with half-tone engravings, including views of residences and public buildings on which the company's metal roofing specialties have been used. The first portion of the book is devoted to a description of the advantages of metal for roofing purposes, special attention being called to the relative values of the different sheet metals for roofing, as compared with other materials. Among the company's specialties to which prominence is given are their Victor metal tile, their Gothic, and Diamond tiles and the Eastlake and Octagon shingles. Metal siding, Japanese hip caps, valleys and roof gutters are also treated, as well as ventilators, galvanized iron conductor heads, finials, expanding conductors, elbows and shoes, miters, end pieces and galvanized iron slip joint gutters. All these goods are made in both tin and galvanized iron, the tin shingles and tiles being thoroughly painted on both sides with the best oil paint. The Octagon shingle is designed for buildings where special ornamental roofing is desired, while the Victor shingles are sold at a moderate price, costing about the same as the ordinary wood shingle, slate or tin roofing. All of the company's metal shingles and tiles are furnished with the Montross telescope side lock, which is claimed to make an absolutely effective joint.

The company send out with their catalogue an attractive little pamphlet entitled "Practical Roofing," which gives directions for the application of their metal roofing specialties. A folder gives information about their Eastlake roofing paint, made in four colors—red, brown, black and slate. This paint is especially prepared for metal shingles, tin and iron roofs, smoke stacks and all metal surfaces exposed to the action of the weather. It is furnished with a five years' guarantee, and is claimed to be free from risk of blistering, cracking or granulating, and is claimed to be acid and alkali proof. It also stops leaks of not more than ⅛ inch in size.

PATTERNS FOR RANGE CANOPY.

(Without Allowance for Laps.)

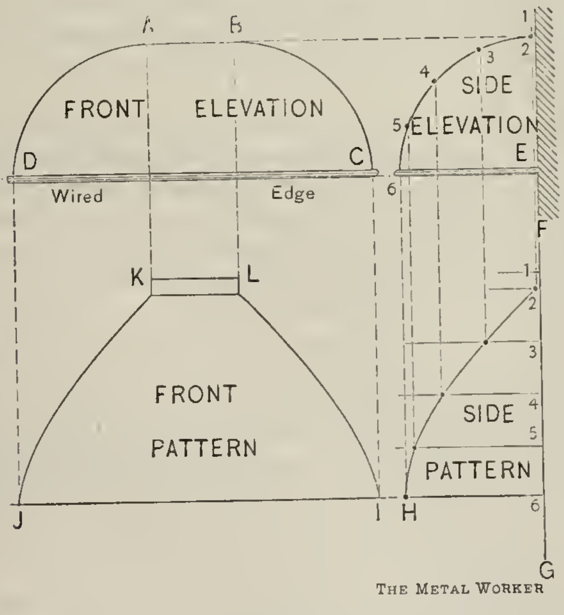
There is, perhaps, nothing in the sheet metal worker's line that so quickly attracts the eye in a well regulated kitchen as a neat, well proportioned range canopy, such as is shown in Fig. 1 of the accompanying cuts. When made of planished sheet iron, or sometimes of planished sheet copper or brass, it becomes an ornament as well as a canopy to catch the fumes from the cooking, for which object it is primarily intended. In Fig. 2 is shown how to develop the patterns for a range canopy. If the front and side view or profile are similar it is only necessary to draw the side view, from which obtain the pattern and then make the front pattern as long as desired, using the miter cut of the side. In this case, however, the front and side elevations are drawn so as to give a clear understanding of every step taken.



THE METAL WORKER

Patterns for Range Canopy.—Fig. 1.—The Canopy in Position.

Let A B C D be the front elevation of the canopy and E 6 2 the side elevation. A flange is added from 2 to 1, through which the canopy is fastened to the chimney or wall. For the pattern for the side extend the line 1 E in the side elevation, as shown by F G. Now divide the curve 2 6 in the side elevation into an equal number of parts, as shown by the small figures 1 to 6. Now place a stretchout of 1 6 on the line F G, as shown from 1 to 6. Through these small figures, at right angles to F G, draw lines, as shown, which intersect with lines drawn at right angles to 6 E from similar points in the side elevation. Trace a line through the points thus obtained. Then will 1 6 H be the pattern for the side.



THE METAL WORKER

Fig. 2.—Front and Side Elevations and Patterns.

It will be noticed that no allowance has been made for wire, which must be added to the pattern, as the pattern is only developed to the under side of the wire, as shown by 6 in the side elevation.

The pattern for the front is obtained as follows, using the miter cut on the side pattern: First draw the line J I, equal in length to D C. Now, using the side pattern 1 H 6, place the bottom of the pattern H 6 upon the line J I, placing the corner H of the pattern upon the corner J, and mark the miter J K. Now reverse the side pattern, and in precisely the same manner obtain the miter cut I L. Then will K L I J be the pattern for the front. Laps must be allowed on the front and side patterns to allow flanges to be stretched, so as to obtain a standing seam on the corners, as shown by C in Fig. 1, or by b' a b'' in Fig. 3. It will be noticed that at a there is a single and a double edge through which rivets are placed at intervals, as shown.

A flange must also be allowed to the straight part 1 to 6 of the side pattern in Fig. 2, to allow a flange to be stretched so that the canopy can be fastened against the chimney D in Fig. 1. It is sometimes the case that the front of the canopy is of such length that a number of sheets are required. In that case straight sheets are placed between, by means of the standing seam e a e' in Fig. 3 and shown at B in Fig. 1, riveting the same as before mentioned.

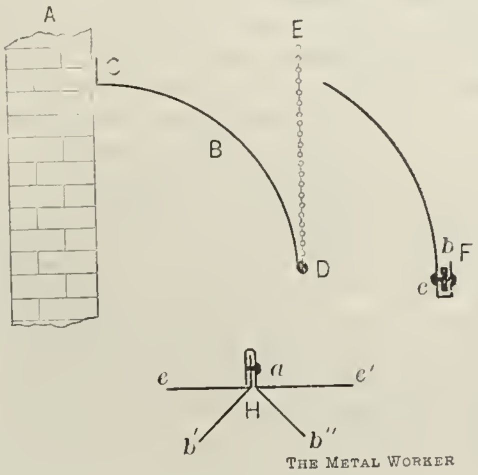


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Fig. 3.—Method of Construction.

Now assuming that the canopy has a wired edge, as shown by D in Fig. 3, it is fastened to the wall A by nailing through the flange C, the canopy B, if very long, being balanced by means of a neat brass or galvanized chain E, and fastened to the wire D and supported by the ceiling above E. Sometimes the wire edge is omitted, and a band iron is bolted or riveted to the lower edge, as shown at E in Fig. 1. The band iron is incased as shown by F in Fig. 3, in which b shows the band or flat iron, the metal c from the canopy being bent around the band iron, as shown, the rivet or bolt being indicated by c. Chains are also employed in this case to hold it in a plumb position.

C. D. Rounds, Central Square, Oswego County, N. Y., is distributing cards advertising Cadwallader's Genuine Old Style Roofing Plates, which he is prepared to furnish in any quantity. These Plates are stamped, resquared and heavily coated with pure refined new metals. Mr. Rounds also handles a number of other brands of Roofing Plates, made by the same concern, including the Saxon, Atlantic, Wonder Old Method, Wonder New Method, Cadwallader's Old Process, Optimist American, Cadwallader's Extra Coated, Cadwallader Old Style and C. W. C. Special brands, as well as both Coke and Charcoal Bright Plates.

A New Metal Roofing and Ceiling Catalogue.

The St. Paul Roofing, Cornice & Ornament Company, St. Paul, Minn., have issued a general catalogue for 1902, covering their productions in sheet metal roofing and siding, cornice and skylights, eave trough and conductor pipe, steel ceilings and interior sheet metal decorations and sheet metal supplies generally. The catalogue is 12 x 9 inches, printed on fine paper, and well illustrated. It is composed of 200 pages, divided into two sections, J and K. In the first section are given a variety of roofing specialties, including Kuehn's corrugated cut offs, galvanized wire conductor strainers. Never-Slip conductor hooks, corrugated hinged hooks, wire eave trough hangers, Imperial eave trough hangers, expanding elbows and shoes, galvanized eave trough and gutters, miters, slip joint end caps and drops, galvanized box and O. G. gutters, gravel roofing, ready roofing building papers, tarred felts, cement, nails, sheet copper, tin plates, valleys, stove pipe and galvanized and black sheets of all kinds, these supplies being extensively handled by the company. Following are presented a number of views of buildings in the Northwest as examples of the effect of sheet metal covering. These include stores, banks, elevators and factories. Rules for measuring buildings for the application of sheet metal are also given, together with diagrams, and other information intended for the use of the sheet metal worker in ordering material.

A variety of styles of sheet metal roofing and siding are shown, together with fire proof steel lath and corrugated iron awnings, with a variety of rock faced sidings, and the St. Paul metal shingles and metal tiles. A portion of the book is devoted to sheet metal ornaments in the line of cresting blocks, ornaments and finials, urns, crosses, conductor heads and galvanized iron finials and weather vanes in a number of attractive designs. Chimney tops and ventilators, skylights and cornices, window and door caps, galvanized steel tanks, smoke stacks, riveted steel pipe, tank heaters and the Giant feed cooker close the first section of the volume.

The second section, K, is devoted exclusively to steel ceilings, side walls, wainscoting and interior finish, a number of pages being occupied by interior views in buildings of various characters in which the company's goods have been used. A large and handsome assortment of steel ceilings, wainscoting, side walls, friezes, coves, center pieces and panel plates is followed by directions for the erection of these goods, and an alphabetical index of the contents of the volume.

FLASHINGS.

On Friday, June 13, a conference between representatives of the American Sheet Steel Company and the Amalgamated Association was held in Pittsburgh, when it was expected the wage scale governing sheet mills for the year ending June 30, 1903, would be adopted. No conference has yet been arranged by the Amalgamated Association with the American Tin Plate Company, but it will likely be held next week or the week after.

The Cornice, Skylight and Sheet Metal Ornament manufacturing business formerly carried on by Robert Jahn, Scotch Plains, N. J., will be continued by his sons, Philip Jahn & Brother.

E. E. Souther, president of the E. E. Souther Iron Company of St. Louis, Mo., sailed with his family on June 5 from New York for Santos, Brazil, from whence he will pay a visit to a married daughter at Sao Paulo, in the interior. Mr. Souther will be absent several months.

The Barrett Mfg. Company, Chicago, Ill., are sending out a leaflet calling attention to their high grade Building Papers, including Barrett's Diamond Red Rosin Sized Sheathing, a heavy weight three-ply Paper of 40 pounds, and Barrett's Challenge Rosin Sized Sheathing, a 30-pound three-ply Paper.

One of the largest contracts ever awarded for Metal Ceilings in New England has just been given to Rourke Bros. of New Haven, Conn. It consists of all the Metal Ceiling work for the new High School Building in that city, about 60,000 square feet. The Penn Metal Ceiling & Roofing Company's goods will be used.

The Nashville Roofing & Paving Company have been incorporated at Nashville with a capital of $50,000 to do a general roofing and paving business. George M. Ingram, William F. Leitwich, Robert L. Proctor and others are the incorporators.

The report that Follansbee Brothers Company, Tin Plate manufacturers, of Pittsburgh, had decided to locate their proposed new plant at Clarksburg, W. Va., is incorrect. They have been figuring for some time on the building of a plant to contain about four Sheet mills and the same number of Tin mills, but the exact location of the plant has not been determined. It will probably be built somewhere in the Pittsburgh district.

It is reported that the Republic Iron & Steel Company are negotiating for the purchase of the Russia mill of the American Sheet Steel Company at Niles, Ohio, which has been idle for several years. The plant contains two Sheet mills, a muck train and 23 puddling furnaces.

The Indianapolis Tin Company, Indianapolis, Ind., have been organized with a capital of $50,000 for the purpose of manufacturing and selling Tin Plate, Tin Cans and all kinds of Tinware. Following are the Board of Directors of the new company: Grafton Johnson, Edmund T. Shubrick and James B. Nelson.

Biersach & Niedermeyer, Milwaukee, Wis., manufacturers of Metallic Fire Proof Windows, have been incorporated under the name of the Biersach & Niedermeyer Company. The officers are: Louis D. Biersach, president; August Niedermeyer, vice-president and treasurer, and Paul L. Biersach, secretary.

A Government bill has been introduced into the Australian Parliament for the encouragement of manufactures in that country. Among the features of the bill is the provision for the payment of a bonus of 10 per cent. of the value of Galvanized Iron produced in Australia and of a similar amount on Iron and Steel Tubes or Pipes (except riveted or cast) not more than 6 inches in diameter. The sum of £50,000 is appropriated for the purpose, the bonus to expire on July 1, 1905.

The new plant of the Jackson Iron & Tin Plate Company, Clarksburg, W. Va., is reported to be about ready to start up in full. The mills have a daily capacity of 70 tons of finished product.

The large 52-inch Sheet mill at the new plant of the Youngstown Iron, Sheet & Tube Company, Youngstown, Ohio, was put in operation last week. This makes six Sheet mills in all now at work out of a total of 16 mills which the company expect to operate. Work on the erection of the other mills will be deferred until the Tube mills are completed, which will be in about a month's time.

Beseman & Bostwick, Hartford, Conn., have the contract for the metal work in connection with the changes in the entrance to the new Hartford Opera House. It includes a metal arch of elaborate design. They also have the contracts on St. Joseph's Parochial School at Bristol and a building for the Stanley Rule & Level Company at New Britain, Conn.

We have received from N. & G. Taylor Company, Philadelphia, a folder of neat get up, referring to their Taylor Old Style Roofing Plates. It contains a full description of the method by which these Plates are made and gives a number of details proving the superiority of this well-known brand of Roofing Plates. The company also send out a neat blotter in the interests of the same brand of Roofing Plates.

J. O. Perkins & Co., Chicago, dealers in Tinners' and Roofers' Supplies, have removed to 235 East Lake street, the expansion of their business necessitating larger quarters than afforded by their old quarters at 241 Lake street.

Don't be satisfied with "good enough" work. Get the reputation of doing first-class work, and then you may expect to hold the trade you build up.

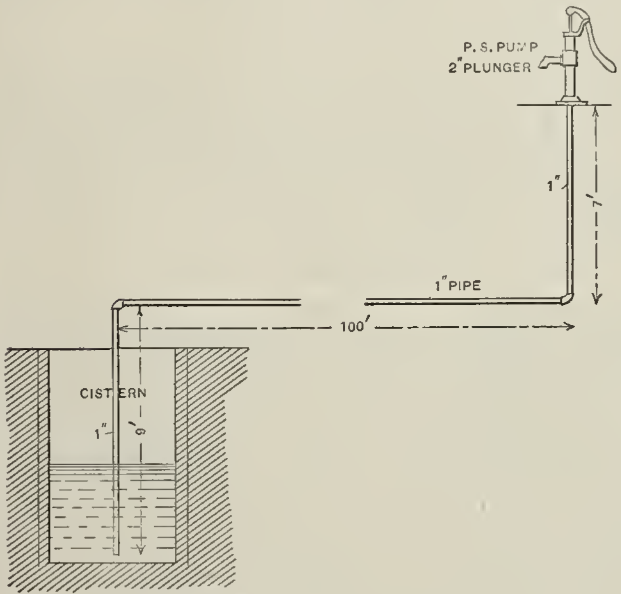
THE LETTER BOX.

Inquiries in regard to practical questions of general interest are invited, in reply to which we shall be glad to receive suggestions and information from our readers.

Correspondents are requested in all cases to give their names and addresses, which will not, however, be published or disclosed without their consent.

SHOULD USE LARGER SUCTION PIPE.

From N. H. B., Bedard, Kan.—I am about to put in a pump job and I do not know whether it will work or not. The pipe is to be arranged as shown in the diagram. The pump is to be used to draw water from a cistern into a house located about 100 feet from it. The water will have to be raised 9 feet from the cistern, then carried over 100 feet and raised 7′ feet more to the house. I had intended to use 1-inch iron pipe for the suction, connecting it with a 2-inch pitcher spout pump. I should be glad to have some of the readers of *The Metal Worker* tell me whether this will work and what changes should be made in the piping, if any are necessary.



Should Use Larger Suction Pipe.

FINDING TRUE ANGLES IN ELBOWS.

From E. K., Philadelphia, Pa.—Will you please let me know through the columns of *The Metal Worker* how to obtain the true angles and miter lines for hot air pipes fitting around a cylinder, also the true angle for a branch from the main pipe, as shown on the sketch which I send herewith?

Answer.—To obtain the true angles for the various elbows and branches shown on our correspondent's sketch, we refer him to *The Metal Worker* of May 9, 1896, on page 40 of which is shown the method of obtaining the true angle in pipe We have no doubt this will answer our correspondent's inquiry, as the principles employed are similar in both cases.

WANTS TO HEAT A CONSERVATORY.

From Greenhouse, Paterson, N. J.—Having read the request for assistance by " G. J. T.," in *The Metal Worker* of June 7, I would recommend that he treat the conservatory as a greenhouse, figuring the radiation required in it on a greenhouse basis, and providing 1 square foot of surface in the radiator for every 4 or 5 square feet of glass exposed. On a basis of 1 square foot of surface to 4 feet of glass surface it will require 55 square feet of radiation, and this should be preferably arranged in the form of a pipe coil made of 1¼-inch pipes, supplied by means of a 1¼-inch pipe and having a 1-inch return pipe running to the heater, with an air valve on the return pipe at the heating coil. The coil should run along the outside wall near the floor.

PATTERN FOR TRANSITION PIECE.

From McG., Boston, Mass.—Will you please inform me through the columns of *The Metal Worker* how to obtain the pattern for a cylinder intersecting a square pitched base?

Answer.—On page 144 of " The New Metal Worker Pattern Book " (Problem 50) is shown how to develop the pattern for the base, while on page 127 (Problem 34) is shown how the cylinder is developed. We refer our correspondent to these problems, which will answer his question.

PAINT FOR ROOFING.

From W. E. J., Cincinnati, Ohio.—Please state in the next issue of *The Metal Worker* what is the best paint for painting tin roofing and valleys, giving reasons for the selection of the paint recommended. I should like to hear from different architects and roofers in regard to this matter.

Note.—We shall be glad if our readers will give their views on this subject. In the meantime, we would refer our correspondent to the many excellent roofing paints presented in our advertising columns. We have no doubt that the manufacturers of these paints can give substantial reasons for their use.

BACK NUMBERS WANTED.

From Edward Killan, 1426 South Lawrence street, Philadelphia, Pa.—Will one of the readers of *The Metal Worker* kindly sell me the copies of *The Metal Worker* of September 1 and 8, 1900, which contain the patterns for " Ship's Ventilator from Lateral Pieces " ?

TRADE NOTES.

The June blotter which the Dixon Crucible Company of Jersey City, N. J., are sending out in the interests of their Graphite productions is adorned with a floral design suitable to the season.

The New Freedom Wire Cloth Company, New Freedom, Pa., have within a short time made shipments of their Wire Cloth to 20 States and Territories. They have also made shipments to Cuba, Porto Rico and Honolulu, as well as to Scotland, British Columbia, Canada, Mexico, India and Australia.

The Staten Island Brass & Grey Iron Foundry Company, Richmond Borough, New York City, recently incorporated, have a fully equipped foundry for the manufacture of Castings of Brass, Gray Iron, Bronze, Aluminum, &c. It is the intention of the company to considerably enlarge the present buildings. The officers are Harry Wilkes, president; William H. Davidson, vice-president, and Thomas L. Fell, secretary and treasurer.

The Challenge Refrigerator Company, Grand Rapids, Mich., issue catalogues showing their lines of Victor, Triumph, Iceberg and Grand Refrigerators. The company advise us that they anticipate adding materially to their factory facilities the coming season, and that they will probably put in a line of White Enameled and Glass Lined Refrigerators.

John A. Walker, vice-president of the Jos. Dixon Crucible Company of Jersey City, N. J., sails for Europe on the " Kaiser Wilhelm der Grosse " on June 17. He expects to be gone about six weeks.

Maine Mfg. Company, Nashua, N. H., issue an attractive folder in which the merits of their White Mountain Refrigerators are set forth. They also manufacture the Maine Refrigerators.

The New Process Metal Rolling Machine Company, with principal office at 332 Harrison avenue, Harrison, N. J., have been incorporated with a capital stock of $125,000 by Warren C. Clouse, Wm. L. Jones, Neil Andrews, Harry L. Bennett, James L. Terhune, May Crane and John D. Crane.

The Vandergrift Mfg. Company of Jamestown, N. Y., are distributing an attractive folder illustrating and describing their new Vandergrift Rotary Washer and Pan-American Washer. These goods are handled by C. D. Rounds, manufacturers' agent, Central Square, Oswego County, N. Y.

TRADE REPORT.

MARKET SUMMARY.

Pig Tin is dull and has developed some weakness.

Copper is quiet and a shade weaker.

Pig Lead remains quiet and firm.

Spelter is still scarce for spot and prices firm.

Antimony is unchanged.

Nickel is in good demand and without change in price.

Aluminum is firm and in good demand.

Tin Plates are quiet, with prices unchanged.

Sheets are very firm in price and in good demand.

Old Metals are rather dull and weak.

Foundry Iron is very scarce, with prices extremely strong and high.

Sheet Copper is in good demand, with prices firm.

Sheet Zinc is without change.

Hardware is somewhat less active on approach of summer; prices rule firm.

Cast Iron Soil Pipe has been advanced 5 per cent. for the 4-inch medium size.

Plumbers' Supplies are dull, with prices strong and tending higher for Iron Goods.

Wire Nails are in better supply, with less demand; prices unchanged.

Cut Nails are in fair demand and prices without change.

Window Glass is dull, with no advance in prices.

White Lead has been moving in larger volume, with prices firm and slightly higher.

Spirits Turpentine is about 1c. a gallon higher.

Linseed Oil is in fair demand and prices unchanged.

METAL MARKET.

New York, June 13, 1902.

Pig Tin.—The market for Tin declined here on Thursday and closed with a decidedly weak tone. The downward movement was due to falling prices in London and recent heavy arrivals of Tin here. Jobbers' prices for Straits Pig in small lots are quoted at 31c. to 31½c. per lb. The business in this metal was of limited proportions, with a light demand and an almost entire absence of speculative transactions.

Charles S. Trench & Co., New York, publish the following American statistics of Pig Tin for June 1, 1902:

	Tons.
Estimated stocks on spot, New York, Philadelphia and Boston, May 1, 1902	2,019
Actual arrivals during May, New York, Philadelphia and Boston	2,972
Total	4,991
Estimated consumption during May	3,200
Estimated stocks on spot, New York, Philadelphia and Boston, June 1, 1902	1,791
Actual afloat from East Indies, shipments to June 1	2,821
Actual afloat from England, shipments to June 1	626
"Acara," ashore at Jones' Beach	90
Total visible supply, June 1	5,328

Copper.—The market for Copper has been dull and devoid of interesting features, and with an underlying weakness, although a somewhat improved feeling in spot Lake Ingot was manifested at the close. Wholesale prices receded slightly during the week. What business was done was almost wholly speculative, consumers buying scarcely anything. Copper in the London market has been gradually declining throughout the past few days. Jobbers quote Lake Ingot in small lots at 13c. to 13¼c. per lb. and Casting Copper at 12¾c. to 13c.

Sheet Copper.—The demand for Sheet Copper continues in good volume, and prices are firm and unchanged on the basis of 18c. per lb. from store.

Pig Lead.—No change is to be noted in this market. Quiet conditions prevail and prices are steady, the figures ruling for a long time past for small lots of American Pig being quoted at 4.45c. to 4½c. per lb.

Spelter.—The market for Spelter is rather quiet, with spot still scarce and relatively high in price. Jobbers are asking about 5¼c. to 5½c. per lb. for small lots of good Western brands. It is reported that the Western producers are showing some disposition to offer prompt shipments of the metal. The St. Louis market had developed a little weakness in the past few days.

Sheet Zinc.—The demand for Sheet Zinc is of the usual proportions, and prices are unchanged at 6¼c. per lb. for 600-lb. cask lots and 6¾c. to 7c. for smaller quantities.

Antimony—Is unchanged. Hallett's in small parcels is quoted at 8⅝c. to 8¾c. per lb.; U. S. at 8⅜c. to 8½c., and Cookson's at 10¼c. to 10¾c.

Nickel.—There is no change in the market for this metal. Small lots are quoted at about 55c. per lb.

Aluminum.—The demand continues active and prices are without change. Small lots of No. 1 Ingot guaranteed 99 per cent. pure are quoted at 37c. per lb., and 100-lb. lots at 35c.

Tin Plates.—The market is absolutely bare of features of interest, the character of business in this department during the past week having been on the lines reported for some weeks past. Very little has been done in the way of large new business, that which is being put through being mainly of a retail character. Meanwhile mills are busy in making shipments on former contracts. Available stocks of Tin Plates in jobbers' hands are decidedly more liberal, but a few of the more popular sizes and brands of Plates are still in somewhat short supply. Jobbers' prices show no change. American Bessemer Coke Plates I C, 14 x 20, in moderate sized lots delivered at New York or corresponding points are quoted at about $4.75 to $4.90 per box.

Sheets.—A moderately active demand for Sheets still continues, but a good many of the larger buyers are covered and are out of the market for the time being. Some Sheet mills continue to have a good deal of trouble to get Steel, and now and then have to close down for lack of Bars. Prices are strong for Sheets for prompt shipment, but it is said that for very desirable orders for future shipment somewhat lower prices than those now current can be obtained from some independent mills. Galvanized Sheets are fairly active, but the demand runs heaviest for the heavier gauges of Black Sheets. Jobbers quote No. 27 one pass Cold Rolled Soft Steel Sheets at about 3.75c. to 3.80c., and No. 24 Galvanized at 4c. to 4.20c.

Chicago advices are as follows: A firmer tone has developed in the Sheet market, with a fair volume of business, premiums of $2 per ton being paid in a small way over the combination prices. No. 27 Black Sheets, Chicago, in small lots from store are quoted at 3.45c. to 3.55c. Galvanized Sheets are quoted at net prices, small lots from store ruling at 4.70c. to 4.75c. for No. 27.

Old Metals.—Demand is rather slack, and the market easier, especially on Scrap Copper and Brass, which are weak. Dealers are paying about the following rates for moderate sized lots, delivered at New York or corresponding points:

Heavy Copper	per lb.	10 c.
Light and Tinned Copper	per lb.	9 c.
Heavy Brass	per lb.	8 c.
Light Brass	per lb.	6½c.
Lead	per lb.	3⅝c.
Tea Lead	per lb.	3 c.
Zinc	per lb.	2⅞c.
Pure Aluminum Sheet	per lb.	22 c.
Cast Aluminum	per lb.	17 c.
No. 1 Pewter	per lb.	18 c.
No. 2 Pewter	per lb.	9 c.
Tin Plate Scrap, per gross ton		.... to $5.00
Wrought Iron Scrap, per gross ton		$13.00 to 13.50
Heavy Cast Scrap, per gross ton		12.00 to 12.50
Stove Plate Scrap, per gross ton		8.50 to 9.00
Burnt Iron, per gross ton		7.00 to 7.25

THE PIG IRON MARKET.

New York.—The market is quiet, but exceedingly firm, and a further upward tendency for prompt Iron. It appears that the great majority of founders have pretty thoroughly covered their requirements for the balance of the year. Quotations for summer delivery are as follows: Northern Iron, at tidewater, No. 1 X, $22.50 to $23; No. 2 X, $21.50 to $22; No. 2 Plain, $21 to $21.50. Tennessee and Alabama brands are quoted as follows: No. 1 Foundry, $21.75 to $22; No. 2 Foundry, $20 to $20.50; No. 3 Foundry, $19.25 to $19.75.

Chicago.—The principal feature of the Pig Iron market during the week has been the entrance of large buyers seeking to place contracts extending into the first six months of 1903. Stove works and general jobbing foundries have been among these buyers. The largest individual contracts, however, have been only from 5000 to 10,000 tons. Strikes at the furnaces and mines in Pennsylvania are responsible for the increased demand in Pig Iron in the West, Eastern buyers having been among the inquirers recently. For prompt delivery premiums of 50c. to $1 per ton are still obtained on both Southern and Northern Iron. Northern makes are particularly scarce. For deliveries extending into the first half of next year some furnaces are quoting 50c. per ton under the asking price for the last quarter of this year. Other makers have refused to offer any for sale. The volume of business during the week has been larger than for some time, the bulk of it being for last quarter delivery. We quote as follows:

Lake Superior Charcoal	$23.00 to $24.00
Local Coke Foundry, No. 1	22.50 to 23.00
Local Coke Foundry, No. 2	21.50 to 22.00
Local Coke Foundry, No. 3	21.00 to 21.50
Local Scotch, No. 1	22.00 to 23.00
Ohio Strong Softeners, No. 1	24.00 to 24.50
Southern Silvery, according to Silicon	21.15 to 21.65
Southern Coke, No. 1	21.65 to 22.15
Southern Coke, No. 2	21.15 to 21.65
Southern Coke, No. 3	21.15 to 21.65
Southern Coke, No. 1 Soft	21.65 to 22.15
Southern Coke, No. 2 Soft	21.15 to 21.65

Philadelphia.—The demand for Pig Iron is not large, as there are very few who are inclined to pay today's prices, unless their needs are imperative. There is still a wide discrepancy between supply and demand, which is covered in a measure by purchases of foreign material. The net result, however, is an increasing shortage. Purchasers of Pig Iron have to pay extremely high figures to get prompt shipments. Prices vary considerably when it comes to actual business, and $22 to $22.50 for No. 2 Foundry is about as good as can be done. Inquiries now coming in indicate the belief that high prices are likely to continue well into next year. Some sales have been made for deliveries in the first half of 1903 at prices equivalent to $20.50 to $21 for No. 2 X, and some at $21 to $21.50 for the last quarter of 1902. Prices for American Iron range about as follows for deliveries extending from October to April, earlier dates costing from $1 to $1.50 more money:

No. 1 X Foundry	$21.50 to $22.50
No. 2 X Foundry	20.50 to 21.50
No. 2 Plain	20.00 to 20.75

Pittsburgh.—The blast furnace strike in the two valleys is practically settled, and most of the idle furnaces have been started. There is not much Pig Iron for sale for delivery this year. Very little business is being done. No. 2 Foundry Iron is quoted at $21.50, Pittsburgh, for Northern brands. Southern Iron is being sold here at somewhat lower prices.

Cincinnati.—The situation in the Pig Iron market here is practically unchanged. There is but little standard Pig Iron, either Northern or Southern, selling, chiefly for the reason that there is little in sight to sell. A few sales of Foundry Iron up to 200 tons are reported on the basis of $17 to $17.50, Birmingham. The market is certainly very strong, and quoted at least 50c. higher than last week's figures. The strike in the Virginia coke regions is beginning to have some influence on the situation, and if it continues will have a distressing effect throughout this field. We quote f.o.b. Cincinnati as follows:

Southern Coke, No. 1	$20.25 to $21.00
Southern Coke, No. 2	19.75 to 20.25
Southern Coke, No. 3	19.25 to 19.75
Southern Coke, No. 4	18.75 to 19.25
Southern Coke, No. 1 Soft	20.25 to 21.00
Southern Coke, No. 2 Soft	19.75 to 20.25
Ohio Silvery, No. 1	22.85 to 23.35
Ohio Silvery, No. 2	22.35 to 22.85
Lake Superior Coke, No. 1	23.85 to 24.35
Lake Superior Coke, No. 2	23.35 to 23.85
Lake Superior Coke, No. 3	22.85 to 23.35

CHICAGO REPORT.

Scrap Iron and Steel.—There have been freer offerings of Stove Plate and prices have again declined. The general market for Scrap of all kinds also is somewhat easier, with a less active demand and a more ample supply. We quote dealers' prices for carload lots, Chicago delivery, as follows:

	Per net ton.
Country Wrought Scrap	$14.00 to $14.50
Machinery Cast	.... to 13.00
Malleable Cast	12.00 to 12.50
Stove Plate (free from burnt)	.... to 9.50
Burnt Iron and Grate Bars	8.00 to 9.00
Sheet Iron and Hoops	8.00 to 9.00
Plow Steel	12.00 to 13.00
Breaking Stock	.... to 11.00
Old Boilers—whole (Iron)	9.50 to 10.00
Old Boilers (Iron) cut in single Sheets and Rings	12.00 to 12.50
Old Gas Pipes and Boiler Tubes	12.00 to 12.50
Cast Borings	8.50 to 9.00
Turnings	12.00 to 12.50
Horseshoes	14.00 to 14.50

Old Metals.—There is a perceptible decrease in the demand for Old Copper, Brass and Lead and the market is weaker in tone, with lower prices prevailing for various kinds. Consumers are giving preference to Ingot Copper at present prices. For Zinc, however, there is a good demand and stronger market, with prices fractionally higher:

	Per lb.
Copper Wire and Heavy	11 c.
Copper Bottoms	10 c.
Copper Clips	11 c.
Red Brass	11 c.
Yellow Brass	8¼c.
Red Brass Borings	10 c.
Yellow Brass Borings	7½c.
Light Brass	7 c.
Pipe Lead	3.70c.
Tea Lead	3.35c.
Zinc	3⅛c.
Tin Foil	22 c.
Pewter, No. 1	19 c.
Pewter, No. 2	11 c.
Aluminum	20 c.

Old Rubber.—The market is quiet and easier in tone, but prices are without essential change. Following prices are paid by dealers in this market:

	Per net ton.	Per lb.
Garden Hose	$25.00	.....
Air Brake Hose	42.00	.....
Rubber Shoes	....	7⅛ to 7¼c.
Rubber Car Springs	....	5 c.
Inside Bicycle Tubing	....	22 c.
Outside Tubing	....	6 c.
Black Rubber	....	4 c.
White Rubber	....	8½c.

Rags.—The offerings have been liberal and with little outlet the market has been easy. Dealers continue to buy, however, at 70c. to 75c. per 100 lbs., Chicago delivery.

Anthracite Coal.—A stronger tone is developing, in sympathy with the unfavorable outlook in the East. Little new business has been taken, but shipments have continued on old contracts. The prices current have remained unchanged, subject to a discount of 30c. per ton for shipment during this month:

	Grate.	Egg and Stove.
Chicago	$5.75	$6.00
Milwaukee, Wis.	5.75	6.00
St. Louis	6.20	6.45
Kansas City, Mo	8.25	8.50

Phœnix Caster Company, Indianapolis, Ind., for whom John H. Graham & Co., 113 Chambers street, New York, are selling agents, issue a finely illustrated descriptive catalogue of their Antifriction Casters, which are made in great variety for numerous and diversified uses. New goods are illustrated on pages 24, 25, 28, 29, 33 and 40 for heavy trucks, tables, boxes, &c. On the inside of the back cover is a schedule of freight rates to 173 of the larger cities of the United States and Canada from their factory in Hamilton, Ohio.

The Gibson Iron Works, Gibson City, Ill., have built an addition to their works, consisting of a testing room and an office building with storeroom attached, for Fittings, which changes give them additional storage room of 50 per cent. over what they had formerly.

THE HARDWARE TRADE.

There is a perceptible diminution in the volume of orders which are being received by manufacturers, thus furnishing the usual prelude to the dullness which is expected to prevail during at least part of the summer. The number of lines in which heavy stock orders are being placed by the larger buyers is comparatively few, as the requirements for the fall have been already covered for many kinds of goods, while in others there is a feeling that nothing is to be lost by waiting a little. This, however, does not indictate any serious apprehension that the market will weaken. There are certain influences which tend to impart continued strength to it. Among these the difficulty in getting raw material and the high prices which prevail are the most important. Many foundries are inconvenienced by the scarcity of iron, and manufacturers have corresponding difficulty in producing goods into which castings enter. The coal strike has something of a disturbing influence and causes some disquietude. It is hoped, however, that the matter may be adjusted before its consequences become too serious. The movement of general business, so far as the supply of the needs of the smaller merchants is concerned, continues very satisfactory. Jobbers generally, while reporting some relaxing in the demand, regard the trade as in excellent condition, the local merchants doing a good business. Prices are in the main without material change. In some lines which have been in insufficient supply manufacturers are catching up with their orders and given an opportunity to accumulate something of a stock. It remains to be seen whether the cessation of the urgent demand for goods will have much influence in inducing the making of concessions in price. While the situation is regarded as justifying the hope of a large volume of business for some time to come, it is generally recognized that when there is a material falling off in the demand the market will be subjected to a trying test, and a substantial reduction in prices is to be looked for. Fortunately for the present, at least, the indications point to a continuance of prosperity, with a demand which will tax the facilities of manufacturers and should give a profitable business to merchants. If the promise of large crops is realized this will contribute greatly to this desirable result.

NOTES ON PRICES.

Plumbing Supplies.—In New York City and vicinity pronounced dullness has developed in the Plumbing Goods trade. This week is said by many of the local jobbing houses to have been the quietest they have experienced for a long time past. The falling off in the demand for Plumbers' Supplies is attributed mainly to the labor troubles and to the uncertainty regarding the business future, which has been aroused by the coal strike. The high cost of materials and of labor are said to have discouraged the prosecution of building operations in many quarters. Meanwhile, prices in all lines of Plumbers' and Steam Fitters' Supplies continue very strong, with a pronounced upward tendency in certain goods, especially those into the construction of which iron enters.

Cast Iron Soil Pipe and Fittings.—At a meeting of the manufacturers of Cast Iron Soil Pipe and Fittings, which was held in New York City on Thursday, June 5, an advance of 5 per cent. in the price for jobbers for 4-inch Medium Pipe took place. This style of Pipe is not much used in New York City or the adjacent territory. It is used almost exclusively in Philadelphia and the surrounding towns, and it is the trade in that section who will be effected by the change. There has been no change in the price of Medium Fittings, the previous discount being still in effect. The new prices on Medium Pipe are as follows:

4-inch Medium Pipe, S. Hub, per foot	19½c.
4-inch Medium Pipe, D. Hub, per foot	20½c.

Freight allowed on carload lots. Less than carload lots are f.o.b. foundry.

Sanitary Earthen Ware.—We are advised by the Trenton Potteries Company, Trenton, N. J., that the manufacturers of Sanitary Earthen Ware are not working upon a new price-list, as was reported a short time ago. They add that they do not anticipate making any new prices on these goods.

Summer Goods.—The urgent demand for the summer line of goods, such as Refrigerators, Freezers, Screen Doors and Windows, Wire Cloth, Poultry Netting and Lawn Mowers, has perceptibly diminished, and the manufacturers are beginning to catch up with their accumulated business. Nevertheless, there is still difficulty in some quarters in obtaining supplies of seasonable goods, and buyers are sometimes obliged to pay higher prices in order to obtain immediate shipment. Prices in all these lines continue firm.

Wire Nails.—The mills are now in a position to make more prompt shipments of Wire Nails than for some time. Many have caught up with their orders, and with the increase in demand are better able to meet the requirements of the trade. Some falling off in the demand for Wire Nails is reported in the New York market. Nevertheless, business is referred to as fair. Small lots from store are quoted at $2.30 per keg.

Cut Nails.—Cut Iron Nails are still more difficult to obtain than those made from Steel. The local demand continues in about the same proportions and at unchanged prices. Small lots of Cut Nails from store rule at $2.30 per keg.

Window Glass.—The demand for Glass has been very light and more or less shading of prices by jobbers is reported. Under these conditions no advance has been made in quotations by the Jobbers' Association. Single and double strength Glass from store is quoted at 89 per cent. discount.

White Lead.—The cooler weather during the past week has improved the demand for White Lead in Oil. Quotations are firm and slightly higher, small lots of White Lead in Oil from store being quoted at 6½ to 6¾ cents per pound.

Linseed Oil.—Prices on out of town Raw Oil were advanced during the week, but City Raw continues as before, selling in a retail way at 67 to 67½ cents per gallon, according to quantity. The jobbing demand is of fair proportions.

Spirits Turpentine.—The Southern market continues strong in tone, owing to the activity in export buying. Locally the market is about 1 cent higher, Turpentine in small lots being quoted at 50 to 50¼ cents per gallon. The demand is confined to small lots.

Dover Egg Beaters.—Dover Egg Beaters have been advanced in price. The family size now commands 50 cents a gross more, and the hotel size $1.50 above the prices recently ruling.

◆

The Cragin Combined Garbage Crematory & Water Heater Mfg. Company, Chicago, have issued a pamphlet illustrating their sanitary device for the combined purpose of burning garbage and heating water. The company claim that garbage can be incinerated without odor, water heated quickly with a minimum consumption of fuel and sanitation promoted by the use of the device, which has been approved by the Chicago Health and Building Department.

The National Steam Economizer Company, Springfield, Mass., have decided to remove their business to Norwich, Conn., where a well equipped factory will be established for the manufacture of the Keller devices and other appliances for which this concern have the patents.

An "ad." in a trade journal, says the *Construction Review*, will do what traveling men as a rule do not do. It will go to towns off from the railroad where there are no hotels. It will work nights, Sundays and holidays, in wet weather or dry, hot weather or cold. It will talk to a merchant before some of the boys are out of bed in the morning and after they have gone to bed at night. It's one of the few things that has not yet struck for eight hours.

AN ODE TO THE AVERAGE SALESMEN.

BY OLIVE MILNS.

When you want to take a drink,
Do you ever stop to think
That your footsteps better stray outside a bar;
That your quarters can't do worse
By remaining in your purse,
Than by spending them on "don't-know-where-you-are?"
Now, do you ever think?
Well; generally.

When you cultivate a wink,
Do you ever stop to think
That your ogles ought to keep right on one girl;
That your arms should ne'er embrace
Those that boldly go the pace,
When your heart's desire's outside the giddy whirl?
Now, do you ever think?
Well; generally.

When you're on the very brink,
Do you ever stop to think
That gambling, drink and women play the deuce;
That these tendencies don't pay
And your life is thrown away,
By absorbing all the dainties on the loose?
Do you ever turn a leaf?
Well; sometimes.

◆

The Production of Nickel in 1901.

In the report of the mineral resources of the United States in 1901, shortly to be issued, Dr. Joseph Hyde Pratt gives a report on the production of nickel last year, in which he says that the domestic product of nickel has been mainly as a by-product from the lead ore of the mines of La Motte, Mo., since the shutting down of the Gap nickel mines in Lancaster County, Pa., about ten years ago. Small amounts of nickel minerals have been found in North Carolina, but not in commercially sufficient quantities. Similar occurrences of nickel silicate are found in Oregon. Nickel ore is also reported to occur in some quantity near Keller, Wash. The Wyoming nickel ores near Sheridan in that State do not seem to contain nickel in commercial quantity. Nickel ore is found in small quantities in certain districts of Nevada, Arizona, South Dakota and Idaho, and a recent discovery of nickelferous ore is reported in Southeastern Alaska. None of these deposits have been as yet worked commercially.

Nearly all the nickel used in the United States is obtained from the mines in the Sudbury district of Canada, which produce about one-half of the nickel used in the world. The other chief sources are the mines of New Caledonia in the Pacific Ocean, and of Silesia, Austria. Nickel deposits are also being developed in Norway, and a supposed deposit of nickel has lately been discovered near the headquarters of the Tulameen River, British Columbia.

The first use of nickel was in making German silver. It is also extensively used for coinage by the United States and brought from European countries. In this country the metal is now being largely used for coating iron sheets for making culinary utensils and other objects and as a plating material. Its most important modern use, however, is in making nickel steel. Nickeloid, a nickel plating on zinc, which is noncorrosive and does not oxidize or rust, is now being largely used in the manufacture of bathtubs, refrigerator linings, &c.

The product of the nickel mines of the United States for 1901 amounted to 6700 pounds, valued at $3551. This is a decrease of 3015 pounds from the previous year's production. The amount of refined nickel imported and entered for consumption in the United States in 1901 was 117,364,337 pounds, valued at $1,847,166, as compared with 57,956,000 pounds, valued at $1,323,630, entered in 1900. The amount of nickel produced from matte and ore imported into the United States last year was 10,497,097 pounds, worth between $5,000,000 and $6,000,000. There was a decided increase in the importation of nickel ores from New Caledonia last year. The nickel industry is increasing rapidly, and there has been a pronounced growth in the amount of nickel used in the United States.

◆

The Enterprise Stove Company, Vincennes, Ind., whose plant was recently destroyed by fire, advise us that the press reports which stated that the directors of the company had decided to rebuild are not correct. They wish it fully understood that no decision as to whether they will or will not rebuild has yet been made by the company.

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Help and Situations Wanted............ 64

ROOFING SUPPLIES, METALS, TIN PLATES, &c.

REVISED JUNE 13, 1902

Aluminum—

No. 1 Aluminum (guaranteed over 99% Pure), in ingots for remelting.

Small lots	⅌ ℔, 37¢
100-℔ lots	⅌ ℔, 35¢

Aluminum Sheet, B. & S. gauge.
In lots of 50 ℔s or more.

Wider than And including	6-in 14-in ⅌ ℔	14-in. 24-in. ⅌ ℔.	24-in 30-in. ⅌ ℔.
Nos. 13 to 19	$0.42	$0.44	$0.47
" 20	.44	.46	.49
" 21 to 23	.46	.48	.51
" 24	.46	.50	.53
" 25	.47	.51	.54
" 26	.47	.54	.59
27	.48	.57	.62
28	.48	.57	.64
29	.49	.60	.69
30	.50	.64	.77

Note.—Lots of less than 50 ℔s 5¢ ⅌ ℔ extra.

Antimony—

Cookson	⅌ ℔. 10¼@10¾¢
Hallett's	⅌ ℔. 8⅜@8¾¢
U.S.	⅌ ℔ 8⅜@8½¢

Brass, Roll and Sheet...... 30%

Conductors—
Corrugated.

Round or Square.—

Galvanized ½ or more. N'st'd	70&10%
" Not Nested	70&5%
" Plain Round, ½ or more, Nested	70&10%
Galvanized, Plain Round, Not Nested.	70&5%

Spiral Lock Seam Pipe—

Galvanized	60@60&10%

Spiral Riveted.

Galvanized	40%

See also *Elbows and Shoes; Eave Trough Miters; Strainers, Conductor.*

Conductor Strainers—

See *Strainers, Conductor*

Copper—

Lake Ingot	13 @13⅛¢
Casting	12¾@13 ¢
Sheet and Bolt	18¢ ⅌ ℔ basis
Cold Rolled Sheets	19¢ ⅌ ℔ basis
Cold Rolled and Polished Sheets	20¢ basis
Planished Sheets	21¢ basis
Bottoms, Pits and Flats	⅌ ℔ 22¢ basis

Eave Trough Galvanized

Territory	L. C. L.
Eastern	75&10%
Central	75&7½%
Southern	70&12½%
S. Western	70&10%

Terms, 2% for cash.

Eave Trough Mitres—

Lap or Slip Joint	list, 25%

Elbows—Plain Adjustable—

Eastern List.

Tin	30%
Galvanized	30%
Perfect Elbows	40%

Stove Pipe—

Four-Piece

	4	4½	5	5½	6-inch.	
No. 1	$0.80	.85	.90	1.00	1.05	per doz.
No. 2.	.65	.70	.75	.80	.85	"
No 3.	.60	.63	.65	.70	.80	"

Elbows and Shoes—

Galvanized	60%

Gasoline—

See *Petroleum Products.*

Iron Sheet—*Black.*

	One Pass, C. R. Soft Steel.	R. G. Cleaned.
Nos. 14 to 16	⅌ ℔. 3.40	3.45¢
Nos. 18 to 21	⅌ ℔, 3.50	3.55¢
Nos. 22 to 24	⅌ ℔, 3.60	3.65¢
Nos. 25 and 26	⅌ ℔ 3.70	3.75¢
No. 27	⅌ ℔, 3.80	3.85¢
No. 28	⅌ ℔, 3.90	3.95¢

Russia, Planished, &c.

Genuine Russia, according to assortment	⅌ ℔ 11@14 ¢
Do. Stained	6@10½¢
Patent Planished.	⅌ ℔ A, 11¢; B, 10¢ net

Galvanized.

Nos. 14 and 16.	⅌ ℔ 3.45@3.60¢
Nos. 18 and 20.	⅌ ℔, 3.70@3.90¢
Nos. 22 and 24	⅌ ℔, 4.00@4.20¢
No. 26	⅌ ℔, 4.25@4.50¢
No. 27	⅌ ℔, 4.55@4.80¢
No. 28	⅌ ℔, 4.85@5.10¢
No. 30	⅌ ℔, 6.00@6.30¢

No. 20 and lighter, 36 inches wide, 25¢ higher.

Lead—

American Pig		4.45@4½¢
Bar		5@5⅛¢
Pipe	6½¢	20% off
Tin Lined Pipe	12½¢	20% off
Block Tin Pipe	42½¢	20% off
Sheet Lead	7¼¢	20% off

Old Lead in exchange, 3¼¢ ⅌ ℔

Mitres Eave Trough—

See *Eave Trough Mitres*

Nickel—

Per ℔	55@60¢

Paints Oils &c.—
Leads—

Lead, American White, in Oil;	
Lots of 500 ℔ or over	6¼ @ 6½
Lots less than 500 ℔	6½ @ 6¾
Lead, White, in oil, 25 ℔ tin pails, add to keg price	@ ⅛
Lead, White, in oil, 12½ ℔ tin pails, add to keg price	@ 1
Lead, White, in oil, 1 to 5 ℔ assorted tins, add to keg price	@ 1⅛
Lead, White, Dry in bbls	5¾ @ 6
Lead, Red, bbls., ½ bbls. and kegs:	
Lots 500 ℔ or over	@ 6
Lots less than 500 ℔	@ 6⅛

Oils—

Linseed, City, raw	⅌ gal. 67@67½¢
Linseed, City, boiled	69@69½¢
Linseed State and West'n, raw	66@66½¢

Spirits Turpentine—

In Southern bbls	50 @50¼¢
In machine bbls	50¾@51 ¢

Putty—

In bulk	$1.25
In bladders	2.25
In cans 12 ℔ to 25 ℔	2.25
In cans 1 ℔ to 5 ℔	3.25

Petroleum Products—

In Barrels (Barrel included)

Stove Gasoline	⅌ gal. 10½@11¢
Kerosene	⅌ gal. 12@13¢

Pipe Drain...... 40%

Pipe, Spiral—

See *Conductors.*

Registers—

List Sept. 2, 1901.

Black Japanned	70%
White Japanned	70%
Nickel Plated	70%
Bronze Finishes in Imitation of Gold, Silver, Copper or Bronze	70%
Electroplated in Brass, Bronze or Copper	70%
White Porcelain	60%
Solid Brass and Bronze Metal	50%

Roofing Material—

1 Ply Tarred Paper.	⅌ ton. $31.00@32.00
2 Ply Tarred Paper	⅌ roll, 108 sq. ft. 55@60¢
3 Ply Tarred Paper	⅌ roll, 108 sq. ft. 80@85¢
Slater's Felt	⅌ ton, $35.00@36.00
Roofing Pitch	⅌ bbl. $2.50

Rosin—

Common and Good—Strained.

Rosin, C. & D.	⅌ bbl.	$1.62½@$1.65
Rosin, E. & F	⅌ bbl.	1.70 @ 1.75
Rosin, G. & H	⅌ bbl.	1.80 @ 1.85
Rosin, I. & K.	⅌ bbl.	2.10 @ 2.70
Rosin, M. & N.	⅌ bbl.	3.05 @ 3.55

Shoes and Elbows—

See *Elbows and Shoes.*

Slate Roofing—

f. o. b. cars, Quarry Station.

	According to size.
Pennsylvania:	
Best Bangor, ⅌ sqr.	$3.25@$5.00
No. 1 Bangor Ribbon. ⅌ sq	3.25@ 3.50
Pen Argyle, ⅌ sqr.	3.25@ 4.00
Peach Bottom, ⅌ sqr.	5.25@ 6.10
No. 1 Chapman, ⅌ sqr	3.50@ 4.35
No. 1 Penna. Black	$2.75@3.80
Unfading Washington Bangor	$2.25@4.25
Vermont:	
Sea Green, ⅌ sqr	$2.00@$3.40
Purple, ⅌ sqr	4.25@ 4.75
Unfading Green, ⅌ sqr.	3.50@ 4.50
Red, ⅌ sqr.	6 50@10.50
Maine:	
Brownville, Unfading Black, No. 1	$5.00@7.20

Solder—

½&½ guaranteed	20 @20½¢
No. 1	17½@19 ¢

Prices of Solder indicated by private brands vary according to composition

Soldering Fluids—

	—Per Pound.— Barrels	Smaller Q'ntities
Concentrated Flux	4c	5c
Eureka Flux:		
Triple Strength	3c	3½c
Extra Concentrated	4½c	5c
Crystal		7c
Gedney's Fluid	2c	2c
Lennox Fluid	2c	3c
Perfection Flux	3c	3½@1c
Yager's Salts, 1 lb. bottles		each, 50¢
5 lb. bottles, per lb., 45¢		

Soldering Coppers—

Per ℔	20@22¢

Spelter—

Western Spelter	5¼@5½¢

Spiral Pipe—

See *Conductors.*

Stove Pipe Elbows—

See *Elbows, Stove Pipe.*

Stove Trucks—

See *Trucks, Stove.*

Strainers Conductor—

Galvanized	50%

Tin Pigs and Bars—

Banca, pigs. ⅌ ℔	31 @32 ¢
Straits, pigs. ⅌ ℔	31 @32 ¢
Straits, in bars, ⅌ ℔	32 @33 ¢

Tin Plates, American
Charcoal Plates, Bright—

N. B.—The price of 20 x 28 sizes double the price of 14 x 20.

Calland Grade:		
IC,	14 x 20	$7.00
IX,	14 x 20	8.50
IXX,	14 x 20	9.75
IXXX,	14 x 20	11.00
IXXXX.	14 x 20	12.25
Melyn Grade:		
IC,	14 x 20	6.50
IX,	14 x 20	8.00
IXX,	14 x 20	9.25
IXXX,	14 x 20	10.50
IXXXX	14 x 20	11.75
Allaway Grade:		
IC,	14 x 20	6.00
IX,	14 x 20	7.10
IXX,	14 x 20	8.20
IXXX,	14 x 20	9.30
IXXXX,	14 x 20	10.40

Coke Plates, Bright—

Bessemer Steel, or equal to J. B. Grade, full weight	IC, 14 x 20	$4.90@5.00
" "	IX, 14 x 20	$6.00

N. B.—The reduction per box on lighter Plates than IC, 14 x 20, is as follows:

100 ℔	15¢
95 ℔	20¢
90 ℔	25¢
85 ℔	30¢

Terne Plates—

N. B.—The following prices are for IC 20 x 28, the rate for 14 x 20 being half as much. IX is usually held at $2 per box advance for 8 to 10 ℔ coating and $2.50 to $3 advance for 15 ℔ and upward.

About 40 ℔ coating	$16.00@16.50
About 30 ℔ coating	15.25@15.75
About 20 ℔ coating	13.25@13.75
About 15 ℔ coating	11.25@11.75
About 8 ℔ coating	@10.00

Boiler Plates, American—

IXX, 14 x 26	(112 sheets)	$12.50
IXX, 14 x 28	(112 sheets)	13.50
IXX, 14 x 31	(112 sheets)	15.00

Troughs Eave—

See *Eave Trough.*

Trucks, Stove—

Improved Lock Frame, per doz	$15.00
Steel Lock Frame, per doz.	18.00
Daisy Improved pattern, ⅌ doz.	18.00

Tubes and Tubing—

Brazed Brass, List June 6, 1898	40%
Copper and Bronze, 3c per lb. list more than Brass.	
Seamless Brass Tubes, net list Feb. 6, 1899	
Tin	50%
Galvanized	50%
Fittings for do	40%

Zinc—

600 ℔ casks ⅌ ℔	6¼¢
Per ℔	6½@7¢

PLUMBERS' AND STEAM FITTERS' SUPPLIES.

Boilers, Galvanized—

Standard Boilers:	
30 gal	72½%
35 and 40 gal	70%
Other sizes up to 52 gal	65%
52 gal. and above	55&5%
Extra Heavy Boilers:	
18 to 52 gal	60%
53 gal. and above	50&5%

Brass Work, Plumbers'—

List of December 7, 1896.

Compression:	
Basin Cocks	65%
Bath Cocks and Double Bath Cocks	65%
Bibs	65%
Bibs, Flanged	65%
Fuller:	
Bibs	70%
Basin Cocks, Nos. 1 to 4	70%
Bath Cocks, No. 4½	$2.40 each net
Ground Key Work:	
Finished Bibs	55&5%
Rough Bibs	60%
Rough Stop and Stop and Waste Cocks	70@70&5%
Rough Stop and Stop and Waste Cocks, Patented	65@65&5%

Miscellaneous—

Basin Clamps	60@65%
Basin Plugs	60@65%
Chain Stays	60&5@70%

Iron Boiler Couplings:

	Lead Pipe.	Iron Pipe.
Plain Face. ⅌ set	$0.95	$1.05
Ground Face ⅌ set	$1.00	$1.10

Sink or Bath and Wash Tray Plugs	60@65%
Soldering Nipples	70&5@75%
Soldering Unions	70&5@75%
Union Elbows, Hot Water Heating	75@75&15%

Cocks, Valves &c.—
Cocks—
Brass—

Air and Radiator Air	75@75&5%
Gas Meter and Union Meter	65@70%
Steam	65@70%

Iron—

All Iron	70@70&10%
Iron with Brass Plugs	65@70%

Valves—
Brass—

Check	65@70%
Garden Hose	65&10@70%
Gate	65@65&10%
Globe and Angle, hose outlet	65@65&10%
Globe, Angle and Cross	65&10@70&5%
Horizontal, Vertical and Angle Check	65@65&10%
Hot Water Radiator	75%
Radiator	70&10%
Safety	65%
Safety, Low Pressure	65%
Jenkins' Disc:	
Check	65%
Gate	65%
Globe, Angle and Cross	70%
Radiator	80%
Radiator, Corner	75%
Safety	65%

Iron—

Iron Body	70@70&5%
Foot	65@70%
Jenkins Bros.':	
All Iron, except Gate	40&5%
All Iron Gate	35@40%
Iron Body, except Gate	60%
Iron Body Gate	50@50&5%
Swing Check	50%

Earthenware—

Brown Glazed Wash Tubs	20%
Brown Glazed Sinks, Kitchen and Pantry	20%
Basins, Urinals and Hoppers	45%
Closet Bowls, Sundries, Washouts and Pedestals	50%

Fittings—
Brass Fittings—

Finished	70@75%
Rough	70@75%
Bushings	70@75%
Nipples	70@70&2½%
Unions, Rough and Finished	70@70&5%

Iron—

Cast Iron Fittings, Black and Galvanized, Standard sizes	65@70%
Cast Iron Bushings and Plugs	65@70%
Cast Iron Flanges	65@70%
Cast Iron Floor Flanges	65@70%
Malleable Iron Fittings (from ℔ list)	50%
" " Bushings	65@70%
" " Unions	65@70%
" " Unions, Flange	60&10@70%
" " Pipe Hangers, Universal	50%
Wrought Iron Nipples	65@70%
" " Couplings	60@65%
" " Long Screws	60@65%

Lavatories—

Porcelain Enameled Iron	30@30&10%

Oakum—

Plumbers' Oakum, 50 lb. bales, ⅌ ℔	3½¢

Pipe—
Brass, Iron Pipe Size—

⅛	¼	½	¾ to 3 inch
$0.33	.34	.29	.23 ⅌ ℔

Cast Iron Soil—

List Feb. 25, 1901.
2 to 6 inch inclusive.

Standard	50&5%
Extra Heavy	60&7½%
All Fittings	65&10%

7 to 15 inch.

Pipe and Fittings, Standard and Extra Heavy	50%

Wrought Iron—

List Feb. 15, 1900.

	Black.	Galv
⅛ to ½ inch	58%	46%
¾ to 12 inch	65%	58%
Extra Heavy, Plain Ends	50%	40%
Double Extra Heavy	20%	20%

Radiators—

Standard List.

Steam	50&2½%
Hot Water	50%

Sinks, Etc.— Cast Iron—

	Black.	Galv.
Sinks, Square, Half Round and Corner	60@65%	60@65%
Sink Legs.	60%	60@65%
Sink Backs	60%	60@65%
Boiler Stands, Cast Iron	50@10@60%	
Cesspools, Cast Iron	50%	

Wrought Steel Sinks—

New Era, Galv'd and Enameled.	70&5%
New Era, Painted	50&10%
L. & G.	50%

Traps—

Drawn Lead Traps, List June 3, 1901	50&5%

Tubs, Bath—

List April 1, 1902.

Cast Iron Enameled Bath Tubs.	
Regular Patterns, Guaranteed.	30%
All Special Patterns	15%
Solid Copper, list of Feb. 1, 1899	40%
Solid Porcelain—Class A, 30%: B, 40%; C, 50%.	
Steel Clad Copper Lined, list of Feb. 1, 1899	50@55%

ALPHABETICAL LIST OF ADVERTISERS.

Adam, W. J. 28
Adee, Fred. & Co. 29
American Blower Co. 22
American Furnace Co. 14
American Galvanizing Wks. 73
American Radiator Co. 10
American Sheet Steel Co. 1&72
American Steam Gage & Valve Mfg. Co. 1
American Steel Roofing Co. 69
American Tin Plate Co. 72
Anderson Coupling Co. 29
Asphalt Ready Roofing Co. 73
Auld & Conger Co. 68
Barstow Stove Co. 80
Beckwith, P. D., Est. of. 2
Berger Bros. Co. 70
Berger Mfg. Co 74
Bergstrom Bros. & Co. 14
Bertsch & Co. 78
Bliss, E. W. Co. 78
Blodgett, G. S. Co. 22
Bonnot Co. 28
Boynton Furnace Co. 5
Brand Stove Co. 20
Bray, J. & Co. 65
Bridgeport Crucible Co. 24
Brien Heater Co. 22
Bruce & Cook 73&80
Buffalo Forge Co. 76
Burgess Soldering Furnace Co. 29
Burton, W. J. & Co. 70
Callahan, Geo. & Co. 69
Canton Machine & Mfg. Co. 76
Canton Steel Roofing Co. 75
Chattanooga Steel Roofing Co. 73
Cincinnati Stamping Co. 76
City Forge & Iron Works 23
Clac, V. & Sons, Inc. 66
Clark, Henry N. Co. 19
Clark Novelty Co. 66
Clark, Quien & Morse 63
Clason Arch. Metal Works 68
Clayton & Lambert Mfg. Co. 28
Clough, R.M. 75
Coe, Jas. A. & Co. 73
Colwell Lead Co. 29
Cooney & Geiger 67
Cope, Geo. W 25
Cortright Metal Roofing Co. 70
Cory, Uzal & Co. 20
Coshy, C. H. 9
Crosby Steam Gage & Valve Co. 1
Curtis & Curtis Co 29
Danzer Metal Works 79
Day Metallic Mfg. Co. 29
Dighton Furnace Co 18
Dixon, Jos. Crucible Co. 69
Donhle Truss Cornice Brake Co 76
Drake, W. H. 21
Dreis, Andrews & Krump 76
Drouve, G. Co. 69
Edwards, J. H. 28
Edwards Mfg. Co. 74
Eller, J. H. & Co. 75
Energy Elevator Co. 67
Evans Stamping & Plating Co 20
Excelsior Steel Furnace Co. 19
Excelsior Tool & Mch. Wks. 79
Fanner Mfg. Co. 23
Fenn, Geo. E. 67
Floyd, Wells & Co. 15
Follanshee Bros. Co. 1
Forest City Fdry. & Mfg. Co. 22
Foster, F. W. Mfg. Co. 27
Frand, Martin J. & Co. 69
Friedley & Voshardt 74
Frink, I. P. 80
Fuller & Warren Co. 1
Galeshurg Cornice Works 69
Galt, John & Sons 68
Genuine Bangor Slate Co. 68
Giblin & Co. 16
Globe Iron Rfg. & Corrugating Co. 70
Glohe Ventilator Co. 67
Goheille Pattern Co. 26
Gordon, W. J. 79
Gorton & Lidgerwood Co. 1
Graff Furnace Co. 13
Gray, G. L. 73
Gummey, McFarland & Co. 71
Gnnster & Forsyth 28
Gurney Heater Mfg. Co. 15
Gurney Refrigerator Co. 66
Hamlin, G. R. 65
Hanson & Van Winkle Co. 27
Harrington & King Perforating Co. 61
Hart & Cooley Co. 19
Hart & Crouse Co. 13
Heath, C. C. & Co. 15
Hellos-Upton Co. 27
Hess-Snyder Co. 7
Hessler, H. E. Co. 26
Hoffman, Geo. W. 25
Howes, S. M. Co. 20, 21&24
Howson & Howson 65
Hubbell, Harvey 24
Independent Register Co. 23
International Correspondence Schools 65
International Heater Co. 3
Janney, Steinmetz & Co. 75
Jenkins Bros. 1
Johnson, E. J. & Co. 63
Joliet Stove Works 4
Keene, Geo. C. & Co 79
Kelsey Heating Co. 80
Kemp, C. M. Mfg. Co. 28
Kewanee Boiler Co. 18
Kieley & Mneller 1
Koven, L. O. & Bro 26
Kramer Bros. 67
Lalance & Grosjean Mfg. Co. 66
Lawless, John H. 26
Lawrence-Letts Elbow Co. 25
Lennox Manufacturing Co. 23
Littleford Bros. 75
Lyons Specialty Co 67
McClnre & Co. 80
McLeod & Henry Co. 1
McSherry, Chas. 77
Magee Furnace Co 1
Marcy Stove Repair Co. 26
Marston, I. G. & Co. 28
Matthews, H. A. Mfg. Co. 18
Merchant & Co. 68
Metropolis Sheet Metals & Stove Repairing Co. 9
Menrer Bros. Co. 71
Meyer, F. & Bro. Co. 15
Millar, Chas. & Son Co. 80
Miller, Wm. Range & Furnace Co. 8
Milwaukee Pattern Works 9
Miner & Peck Mfg. Co 26
Monash-Younker Co. 29
Moncrief F'ce & Fdry. Co. 20
Montross Metal Shingle Co. 73
Morgan & Co. 28
Mneller, L. J. F'ce Co. 17
Mnllins, W. H. 73
Mnnsell, E. & Co. 23
National Enameling & Stamping Co. 80
National Pipe Bending Co. 20
New York Iron Roofing & Corrugating Co. 70
Niagara Machine & Tool Wks. 77
Noppel Pump Co. 28
O'Halloron & Jacobs 68
Ohio Mica Co. 23
Ohio Stove Co. 10
Ohl, Geo. A. & Co. 78
Oshorn, J. M. & L. A. 70
Ostrander, W. R. & Co. 77
Patrick Furnace Co. 17
Peck, Stow & Wilcox Co. 77
Peck-Williamson Co. 18
Penn Metal Ceiling & Roofing Co. 69
Perkins, J. L. & Co. 67
Phila. Machine Tool Co. 77
Pierce, Butler & Pierce Mfg. Co. 22
Pittsburgh Stove & Range Co. 7
Preshrey Stove Lining Co. 26
Rasner & Dinger 69
Rathhone, Sard & Co. 6
Richmond Co 12
Rohinson, J. M. & Co. 79
Rutland Fire Clay Co. 25
Salem Nail Co. 68
Saunders', D. Sons 29
Schratwiesers Metal Lath Works 73
Schwah, R. J. & Sons Co. 17
Schwerdtle Stamp Co. 69
Scranton Corundum & Emery Wheel Co. 9
Shepard, Sidney & Co. 26
Sheppard, Isaac A. & Co. 1
Shields, W. H. & Co. 26
Smith, H. B. Co. 11
Smith & Anthony Co. 80
Smith & Thayer Co. 16
Smith-Warren Co. 70
Somerset Stove Fdry. Co. 9
Sommer's, John Son 1
Special Notices 65
Sperry, D. R. & Co. 67
Stamford Foundry Co 21
Standard Lighting Co. 9
Steel & Iron Aluminum Coating Co. 71
Stiles & Parker Press Co. 78
Stocking, E. B. 65
Stolz, Frank D. 22
Stover Mfg. Co 23
Stowell Mfg. Co. 76
Swaine, F. J. Co. 77
Taylor & Boggis Fdry. Co. 8
Taylor Co., N. & G. 80
Toledo Mch. & Tool Co. 79
Triumph Adjustable Stove Pipe Mfg. Co. 24
Troy Nickel Works 25
Tubular Heating & Ventilating Co. 16
Tucker & Dorsey Mfg. Co. 27
U. S. Register Co., Ltd. 9
Utica Heater Co. 14
Valentine, M. D. & Bro. Co. 26
Vedder Pattern Works 25
Vogel, William & Bros 67
Walker & Pratt Mfg. Co. 19
Walworth Mfg. Co. 1
Washhurne, E. G. & Co. 67&76
Wayne, Anthony Mfg. Co. 66
Weir Stove Co. 80
Weiss, H. & Co. 76
Wheeler, W. A. 79
White, Warner Co. 22
Willard, Wm. G. 9
Williams Stove Lining Co. 26
Wister, L. & R. & Co 80
Wood, Alan Co. 73
Young, Jos. H. 27
Zucker & Levett & Loeb Co. 27

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STEEL, IRON, COPPER, ZINC, BRASS, TIN, and all other metals PERFORATED AS REQUIRED for

Grain Cleaning and Mining Machinery, Woolen, Cotton, Paper and Pulp Mills, Rice, Flour and Cotton Seed Oil Mills, Sugar and Malt Houses, Distilleries, Filter Presses, Stone, Coal and Ore Screens, Brick and Tile Works, Filters, Spark Arresters, Gas and Water Works, Oil, Gas and Vapor Stoves, Coffee Machinery, &c., &c.

Standard Sizes Perforated Tin and Brass Always in Stock.

The Harrington & King Perforating Co.,
217 North Union St., CHICAGO, ILL., U. S. A.
NEW YORK OFFICE, 114 Liberty Street.

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Aluminum Coated Sheet Steel.
Steel & Iron Aluminum Coating Co., Connellsville, Pa.

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Janney, Steinmetz & Co., Phila., Pa.

Aluminum Scrap Buyers.
Janney, Steinmetz & Co., Phila., Pa.

Aluminum Sheets.
Janney, Steinmetz & Co., Phila., Pa.

Architectural Ornaments.
Edwards Mfg. Co., Covington, Ky.
Frand, Martin J. & Co., Camden, N. J.
Friedley & Voshardt, Chicago, Ill.
Mullins, W. H., Salem, O.

Ball Cocks
Foster, F. W. Mfg. Co., Boston, Mass.

Bathtubs.
Day Metallic Mfg. Co. Detroit, Mich.

Black Plates.
American Tin Plate Co., New York.
Taylor, N. & G. Co., Phila., Pa.

Blast Gates.
American Blower Co., Detroit, Mich.

Blowers.
American Blower Co., Detroit, Mich.
Buffalo Forge Co., Buffalo, N. Y.

Boiler Handles.
Berger Bros. Co., Phila., Pa.

Boilers
Mueller, L. J. Furnace Co. Milwaukee, Wis.

Boilers, Range.
Koven, L. O. & Bro., 50 Cliff St. N. Y

Brass Goods
Jenkins Bros., 71 John St., N. Y.

CanMakers' Tools and Machines.
Bliss, E. W. Co., Brooklyn, N. Y.
Gordon, W. J., Phila., Pa.
Niagara Machine & Tool Wks., Buffalo, N. Y.
Robinson, J. M. Mfg. Co., Cincinnati, Ohio.
Stiles & Parker Press Co. Brooklyn, N. Y
Toledo Machine & Tool Co. Toledo, O

Castings, Iron.
Taylor & Boggis Foundry Co., Cleveland, O.

Ceilings, Metallic.
Berger Mfg. Co., Canton, O.
Canton Steel Roofing Co., Canton, O.
Eller, J. H. & Co., Canton, O.
Friedley & Voshardt, Chicago, Ill.
New York Iron Roofing & Cor. Co., Jersey City, N. J.

Cellar Drainers.
Kemp, C. M. Mfg. Co., Baltimore, Md.

Cement Tampers.
Kramer Bros., Dayton, O.

Chimney Caps.
Lyons Specialty Co., Lyons, Iowa.

Coal Vases.
Cincinnati Stamping Co. Cincinnati, Ohio.

Coils.
National Pipe Bending Co., New Haven, Conn.

Conductor Pipe and Elbows.
American Steel Roofing Co., Middletown, O.
Berger Bros. Co., Philadelphia, Pa.
Clark, Quien & Morse, Peoria, Ill.
Lawrence-Letts Elbow Co., Ltd., Waverly, N. Y.
McClure & Co., Pittsburgh, Pa.

Conductor Pipe Machinery.
Canton Mch. Mfg. Co., Canton, O.

Copper, Roofing and Cornice.
Gummey, McFarland & Co., Phila., Pa.

Cornice Machinery.
Double Truss Cornice Brake Co., Buffalo, N. Y.
Dreis, Andrews & Krump, Chicago, Ill.
Keene, Geo. C. & Co., Cincinnati, O.
Niagara Machine & Tool Works, Buffalo, N. Y.
Ohl, Geo. A. & Co., Newark, N. J.
Peck, Stow & Wilcox Co., 27 Murray St., New York.
Phila. Machine Tool Co., Phila., Pa.
Robinson, J. M. Mfg. Co. Cincinnati, Ohio.

Cornice Work, Galvanized Iron.
Mullins, W. H., Salem, O.

Cut Offs, Rain Water.
Cooney & Geiger, Indianapolis, Ind.
Perkins, J. L. & Co., Chicago, Ill.

Dampers.
Howes, S. M. Co., Boston, Mass.
Shields, W. H. & Co., Troy, N. Y.
Stover Mfg. Co., Freeport Ill
Taylor & Boggis Fdry. Co., Cleveland, Ohio.
Troy Nickel Works, Troy, N. Y.

Die Stocks.
Curtis & Curtis Co., Bridgeport, Ct.

Draft Registers.
Matthews, H. A. Mfg. Co., Seymour, Ct.

Drop Hammers.
Bliss, E. W. Co., Brooklyn, N. Y.
Toledo Mach. & Tool Co., Toledo, O.

Dryers.
Sommer's, John Son, Newark, N. J.

Dumb Waiters.
Energy Elevator Co., Phila., Pa.

Eave Troughs.
Berger Bros. Co., Philadelphia, Pa.
Berger Mfg. Co., Canton, O.
Clark, Quien & Morse, Peoria, Ill.
Eller, J. H. & Co., Canton, O.

Eave Trough Hangers.
Berger Bros. Co., Phila., Pa.
Berger Mfg. Co., Canton, O.

Eave Trough Machinery.
Canton Mch. Mfg. Co., Canton, O.

Edgers, Roofing.
Danzer Metal Works, Hagerstown, Md.

Elbows, Stove Pipe.
Lawrence-Letts Elbow Co., Ltd., Waverly, N. Y.
Shepard, Sidney & Co., Buffalo, N. Y

Electric Dynamo Machines.
Hanson & Van Winkle Co., Newark, N. J.
Zucker & Levett & Loeb Co., 526 W. Twenty-fifth St., New York.

Emery Wheels.
Scranton Corundum & Emery Wheel Co., Scranton, Pa.

Enameled Ware.
Lalance & Grosjean Mfg. Co., 19 Cliff St., N. Y.
National Enameling & Stamping Co., 78 Beekman St., N. Y.

Exhausters.
American Blower Co., Detroit, Mich.
Buffalo Forge Co., Buffalo, N. Y.

Faucets.
Clark Novelty Co., Rochester, N. Y

Fire Brick.
Preshrey Stove Lining Co., Taunton, Mass.
Rutland Fire Clay Co., Rutland, Vt.
Valentine, M. D. & Bro. Co., Woodbridge, N. J.
Williams Stove Lining Co. Taunton, Mass.

Fire Pots.
Burgess Soldering Furnace Co., Columbus, Ohio.
Clayton & Lambert Mfg. Co., Detroit, Mich.

Fire Sets.
Shields, W. H. & Co., Troy, N. Y.
Troy Nickel Works, Troy, N. Y.

Furnace Cement.
Perkins, J. L. & Co. Chicago, Ill.
Rutland Fire Clay Co., Rutland, Vt.

Furnace Pipe and Fittings.
Excelsior Steel Furnace Co., Chicago, Ill.
International Heater Co., Utica, N. Y.
Meyer, F. & Bro Co., Peoria, Ill.
Osborn, J. M. & L. A., Cleveland, O.

Furnaces and Heaters.
Amer. Furnace Co., St. Louis, Mo.
Barstow Stove Co., Providence, R. I.
Beckwith, P. D., Est. of, Dowagiac, Mich.
Bergstrom Bros. & Co., Neenah, Wis.
Bonnot Co., Canton, O.
Boynton Furnace Co., 207 Water St., N. Y.
Brand Stove Co., Milwaukee, Wis.
Brien Heater Co., Hoosick Falls, N. Y.
Cory, Uzal & Co. 210 Water St., N. Y
Dighton Furnace Co., Taunton, Mass.
Floyd, Wells & Co., Royersford, Pa.
Forest City Fdry. & Mfg. Co., Cleveland, O.
Giblin & Co., Utica, N. Y.
Graff Furnace Co., 208 Water Street, New York.
Hart & Crouse Co., Utica, N. Y.
Hess-Snyder Company, Massillon, O.
Howes S. M. Co., Boston, Mass.
International Heater Co., Utica, N. Y.
Kelsey Heating Co., Syracuse, N. Y.
Lennox Manufacturing Co., Marshalltown, Iowa.
Magee Furnace Co., Boston, Mass.
Meyer, F. & Bro. Co., Peoria, Ill.
Moncrief Furnace & Fdry Co., Atlanta, Ga.
Mueller, L. J. Furnace Co., Milwaukee, Wis.
Patric Furnace Co., Springfield, O.
Peck-Williamson Co., Cincinnati, O.
Richmond Company, Norwich, Conn.
Schwab, R. J. & Sons Co., Milwaukee, Wis.
Sheppard, Isaac A. & Co., Phila., Pa.
Stamford Foundry Co., Stamford, Ct.
Tubular Heating and Ventilating Co., Phila., Pa.
Utica Heater Co., Utica, N. Y.
Walker & Pratt Mfg. Co., Boston, Mass.

Gas Heaters. *(See Stoves and Ranges. Gas.)*

Gas Machines.
Kemp, C. M. Mfg. Co., Baltimore, Md.

Granite Steel Ware.
National Enameling & Stamping Co., 78 Beekman St., N. Y.

Groovers.
Wheeler, W. A., Indianapolis, Ind.

Gutter Formers.
Double Truss Cornice Brake Co., Buffalo, N. Y.

Heaters, Steam and Hot Water.
American Radiator Co., Chicago, Ill.
Barstow Stove Co., Providence, R. I.
Boynton Furnace Co., 207 Water St., N. Y.
Dighton Furnace Co., Taunton, Mass
Drake, W. H., Newark, N. J.
Gorton & Lidgerwood Co., 96 Liberty St., New York.
Gurney Heater Mfg. Co., Boston, Mass.
Hart & Crouse Co., Utica, N. Y.
International Heater Co., Utica, N. Y.
Kewanee Boiler Co., Kewanee, Ill.
Magee Furnace Co., Boston, Mass.
Mueller, L. J. Furnace Co., Milwaukee, Wis.
National Pipe Bending Co., New Haven, Conn.
Pierce, Butler & Pierce Mfg. Co., Syracuse, N. Y.
Richmond Company, Norwich, Conn.
Sheppard, Isaac A. & Co., Phila., Pa.
Smith, H. B. Co., Westfield, Mass.
Smith & Anthony Co., Boston, Mass.
Smith & Thayer Co., Boston, Mass.
Stolz, Frank D., Chicago, Ill.
Utica Heater Co., Utica, N. Y.
Walker & Pratt Mfg. Co., Boston, Mass.

Hollow Ware.
Lalance & Grosjean Mfg. Co., 19 Cliff St., New York.
National Enameling & Stamping Co., 78 Beekman St., N. Y.
Sperry, D. R. & Co., Batavia, Ill.

Hotel Cooking Apparatus.
Smith & Anthony Co., Boston, Mass.

Household Specialties.
Shepard, Sidney & Co., Buffalo, N. Y.

Ice Cream Dishers.
Clad, V. & Sons, Philadelphia, Pa.

Iron, Galvanized Sheet. *(See Sheets, Galvanized.)*

Iron and Steel, Sheet. *(See Sheets, Iron and Steel.)*

Iron, Planished Sheet.
Amer. Sheet Steel Co., New York.

Lath, Metallic.
Schratwiesers Metal Lath Works, Brooklyn, N. Y.

Lead Pipe.
Colwell Lead Co., 63 Centre St., N. Y.

Lead Washers.
Littleford Bros., Cincinnati, O.

Lightning Rods.
Washburne, E G. & Co. 46 Cortlandt St., N. Y

Metal Ceilings. *(See Ceilings, Metallic.)*

Metal Window Frames,
Smith-Warren Co., Boston, Mass.

Mica.
Munsell, Eugene & Co., 218 Water St., New York.
Ohio Mica Co., Canton, Ohio.
Rutland Fire Clay Co., Rutland, Vt.

Milk Cans.
National Enameling & Stamping Co., 78 Beekman St., N. Y.

Nickel Plating Outfits.
Hanson & Van Winkle Co., Newark, N. J.
Zucker & Levett & Loeb Co., 526-530 W. Twenty-fifth St., New York.

Oil Heaters. *(See Stoves and Ranges, Oil, Vapor and Gasoline.)*

Oven Indicators.
Helios-Upton Co., Peabody, Mass.

Oven Thermometers.
Evans Stamping & Plating Co., Taunton, Mass.

Ovens, Portable.
Blodgett, G. S. Co., Burlington, Vt.
Howes, S. M. Co., Boston, Mass.

Patent Solicitors.
Hamlin, G. R., Washington, D. C.
Howson & Howson, Philadelphia, Pa.
Stocking, E. B., Washington, D. C.

Patterns.
Cope, Geo. W., Detroit, Mich.
Gobeille Pattern Co., Cleveland, Ohio.
Gray, G. L., Galesburg, Ill.
Vedder Pattern Wks., Troy, N. Y.

Perforated Sheet Metal.
Harrington & King Perforating Co., Chicago, Ill.

Pig Iron.
Wister, L. & R. & Co., Philadelphia, Pa.

Pipe Cutting and Threading Machines.
Curtis & Curtis Co., Bridgeport, Ct.
Saunders, D. Sons, Yonkers, N. Y.

Pipe Joint Cement.
Callahan, Geo. & Co., 218 Front Street, N. Y.

Pipe Vises.
Walworth Mfg. Co., Boston, Mass.

Pipe, Water and Gas.
Millar, C. & Son Co., Utica, N. Y.

Plumbers Tools, Specialties and Supplies.
Adee, Fred. & Co., 90 Beekman St., N. Y.
Anderson Coupling Co., Portland, Ct.
Barstow Stove Co., Providence, R. I.
Clayton & Lambert Mfg. Co., Detroit, Mich.
Colwell Lead Co., 63 Centre St., N. Y.
Foster, F. W. Mfg. Co., Boston, Mass.
National Pipe Bending Co., New Haven, Conn.
Pierce, Butler & Pierce Mfg. Co., Syracuse, N. Y.
Walworth Mfg. Co., Boston, Mass.
Young, Jos. H., Boston, Mass.

Plyers, Pipe Expanding.
Anderson Coupling Co., Portland, Ct.

Pokers and Lifters.
Shields, W. H. & Co., Troy, N. Y
Stover Mfg. Co., Freeport, Ill.
Troy Nickel Works, Troy, N. Y.

Potato Masher.
Vogel, Wm. & Bros., Brooklyn, N. Y.

Presses and Dies.
Bliss, E. W. Co., Brooklyn, N. Y.
Gordon, W. J., Phila., Pa.
Miner & Peck Mfg. Co., New Haven, Conn.
Niagara Machine & Tool Wks., Buffalo, N. Y.
Phila. Machine Tool Co., Phila., Pa.
Robinson, J. M. Mfg. Co., Cincinnati, Ohio.
Stiles & Parker Press Co., Brooklyn, N. Y.
Swaine, F. J. Co., St. Louis, Mo.

Pumps.
Hess-Snyder Company, Massillon, Ohio
Lawless, John H., Jersey City, N. J.
Noppel Pump Co., Hartford, Conn.

Punching Machines.
Bertsch & Co., Cambridge City, Ind.
Bliss, E. W. Co., Brooklyn, N. Y.
Buffalo Forge Co., Buffalo, N. Y.
Clough, R. M., Tolland, Conn.
Robinson, J. M. Mfg. Co., Cincinnati, Ohio.
Toledo Mach. & Tool Co., Toledo, O.

Radiators, Hot Air.
Burton, W. J. & Co., Detroit, Mich.
Independent Register Co., Cleveland, Ohio.

Radiators, Steam and Hot Water.
American Radiator Co., Chicago, Ill.
Gurney Heater Mfg. Co., Boston, Mass.
Pierce, Butler & Pierce Mfg. Co., Syracuse, N. Y.

Range Boilers.
Koven, L. O. & Bro., 50 Cliff St., N. Y.

Reflectors.
Frink, I. P., 551 Pearl St., New York.

Refrigerators.
Gurney Refrigerator Co., Fond du Lac, Wis

Registers.
Canton Steel Roofing Co., Canton, O.
Dighton Furnace Co., Taunton, Mass.
Hart & Cooley Co., New Britain, Conn.
Independent Register Co., Cleveland, Ohio.

Registers, Draft.
Matthews, H. A. Mfg. Co., Seymour, Ct

Registers, Hot Air.
U. S. Register Co., Ltd., Battle Creek, Mich.

Roofing, Asphalt.
Asphalt Ready Roofing Co., 136 Water St., N. Y.

Roofing Cement and Paint.
Asphalt Ready Roofing Co., 136 Water St., N. Y.
Callahan, Geo. & Co., 218 Front Street, N. Y.
Chattanooga Steel Roofing Co., Chattanooga, Tenn.
Dixon, Jos. Crucible Co., Jersey City, N. J.
Perkins, J. L. & Co., Chicago, Ill.
Rutland Fire Clay Co., Rutland, Vt.

Roofing Cork.
Stowell Mfg. Co., Jersey City, N. J.

Roofing Edgers.
Danzer Metal Works, Hagerstown, Md.

Roofing and Siding, Iron and Steel, Corrugated and Plain.
Berger Mfg. Co., Canton, O.
Burton, W. J. & Co., Detroit, Mich.
Canton Steel Roofing Co., Canton, O.
Chattanooga Steel Roofing Co., Chattanooga, Tenn.
Eller, J. H. & Co., Canton, O.
Globe Iron Roofing & Corrugating Co., Cincinnati, O.
Gummey, McFarland & Co., Phila., Pa.
New York Iron Roofing & Cor. Co., Jersey City, N. J.

Roofing Nails.
Salem Nail Co., 279 Pearl St., N. Y.

Roofing Slate.
Anld & Conger Co., Cleveland, O.
Bray, J. & Co., E. Bangor, Pa.
Galt, John & Sons, 253 Broadway, N. Y.
Genuine Bangor Slate Co., Easton, Pa.
Johnson, E. J. & Co., 38 Park Row, N. Y.
O'Halloran & Jacobs, Pittsburgh, Pa.

Sap Spouts.
Millar, C & Son Co., Utica, N. Y.

Schools and Colleges.
International Correspondence Schools, Scranton, Pa.

Screens.
Harrington & King Perforating Co., Chicago, Ill.

Screws.
Hubbell, Harvey, Bridgeport, Ct.

Sewer Pipe.
Rutland Fire Clay Co., Rutland, Vt.

Shaped Iron and Steel, Galvanized.
Am. Galvanizing Wks., Chicago, Ill.

Shears, Sheet Metal
Buffalo Forge Co., Buffalo, N. Y.
McSherry, Chas., Pittsburgh, Pa.
Peck, Stow & Wilcox Co., 27 Murray St., N. Y

Sheet Metal Machinery.
Bertsch & Co., Cambridge City, Ind.
Bliss, E. W. Co., Brooklyn, N. Y.
Clough, R. M., Tolland, Conn.
Double Truss Cornice Brake Co., Buffalo, N. Y
Excelsior Tool & Mch. Works, St. Louis, Mo.
Gordon, W. J., Phila., Pa.
Keene, Geo. C. & Co., Cincinnati, O.

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Miner & Peck Mfg. Co., New Haven, Conn.
Niagara Machine & Tool Wks., Buffalo, N. Y.
Ohl, Geo. A. & Co., Newark, N. J.
Peck, Stow & Wilcox Co., 27 Murray St., New York.
Phila. Machine Tool Co., Phila., Pa.
Robinson, J. M. Mfg. Co., Cincinnati, Ohio.
Stiles & Parker Press Co., Brooklyn, N. Y.
Swaine, F. J. Co., St. Louis. Mo.

Sheets, Aluminum Coated Steel.
Steel & Iron Aluminum Coating Co., Connellsville, Pa.

Sheets, Galvanized.
American Sheet Steel Co., New York.
Bruce & Cook, 186 to 190 Water St., N. Y.
McClure & Co., Pittsburgh, Pa.
Osborn, J. M. & L. A., Cleveland, O.
Wood Alan Co., Philadelphia, Pa.

Sheets, Iron and Steel.
American Sheet Steel Co., New York.
Bruce & Cook, 186 to 190 Water St., N. Y.
Coe, Jas. A. & Co., Newark, N. J.
Follansbee Bros. Co., Pittsburgh, Pa.
Gummey, McFarland & Co., Phila., Pa.
Osborn, J. M. & L. A., Cleveland, O.
Wood Co., Alan, Philadelphia, Pa.

Shingles and Tiles, Metallic.
Chattanooga Steel Roofing Co., Chattanooga, Tenn.
Cincinnati Stamping Co., Cincinnati, O.
Cortright Metal Roofing Co., Philadelphia, Pa.
Merchant & Co., Philadelphia, Pa.
Meurer Bros. Co., Brooklyn, N. Y.
Montross Metal Shingle Co., Camden, N. J.
Penn Metal Ceiling & Rfg. Co., Phila., Pa.

Shot.
Colwell Lead Co., 63 Centre St., N. Y.

Siding. *(See Roofing and Siding.)*

Sinks.
Lalance & Grosjean Mfg. Co., 19 Cliff St., New York.

Skylights.
Canton Steel Roofing Co., Canton, O.
Chattanooga Steel Roofing Co., Chattanooga, Tenn.
Dronve, G. Co., Bridgeport, Conn.
Galesburg Cornice Works, Galena, Ill.
Mullins, W. H., Salem, O.
Rasner & Dinger, Pittsburgh, Pa.

Slaters' Tools.
Galt, Jno. & Sons, 253 Broadway, N. Y.
Salem Nail Co., 279 Pearl St., N. Y.

Smoke Test Machine.
Gunster & Forsyth, Scranton, Pa.

Snow Guards.
Clason Arch. Metal Works, Providence, R. I.

Solder.
Bruce & Cook, 186 to 190 Water St., NY
Follansbee Bros. Co., Pittsburgh, Pa.
Gummey, McFarland & Co., Phila., Pa.
McClure & Co., Pittsburgh, Pa.
Meurer Bros. Co., Brooklyn, N. Y
Taylor, N. & G. Co., Philadelphia, Pa.

Soldering Furnaces.
Burgess Soldering Furnace Co., Columbus, Ohio.

Speaking Tubes and Whistles.
Ostrander, W. R. & Co., 22 Dey Street, N. Y.

Specialties, Sheet Metal.
Vogel, Wm. & Bros., Brooklyn, N. Y.

Statuary, Sheet Copper and Bronze.
Mullins, W. H., Salem, O.

Steam and Gas Fitters' Supplies.
Curtis & Curtis Co., Bridgeport, Conn.
Walworth Mfg. Co., Boston, Mass.

Steam and Water Engineering and Regulating Specialties.
Kieley & Mueller, 7-11 West 13th St., N. Y

Steel Stamps and Stencil Dies.
Schwerdtle Stamp Co., Bridgeport, Ct.

Stove Cement.
Dixon, Jos. Crucible Co., Jersey City, N. J.
Rutland Fire Clay Co., Rutland, Vt.

Stove Linings.
Bridgeport Crucible Co., Bridgeport, Conn.
Hessler, H. E. Co., Syracuse, N. Y.
McLeod & Henry Co., Troy, N. Y.
Marcy Stove Repair Co., 74 Beekman St., N. Y.
Presbrey Stove Lining Co., Taunton, Mass.
Rutland Fire Clay Co., Rutland, Vt.
Valentine, M. D. & Bro. Co., Woodbridge, N. J.
Williams Stove Lining Co., Taunton, Mass

Stove and Metal Polish.
Hoffman, Geo. W., Indianapolis, Ind.
Rutland Fire Clay Co., Rutland, Vt.

Stove Patterns.
Cope, G. W., Detroit, Mich.
Gobeille Pattern Co., Cleveland, O.
Milwaukee Pattern Works, Milwaukee, Wis.
Vedder Pattern Works, Troy, N. Y.

Stove Pipe.
Triumph Adjustable Stove Pipe Mfg. Co., Peoria, Ill.

Stove Pipe Thimbles.
City Forge & Iron Works, Dayton, O.

Stove Repairs.
Clark, Henry N. Co., Boston, Mass.
Heath, C. C. & Co., Phila., Pa.
Howes, S. M. Co., Boston, Mass.
Marcy Stove Repair Co., 74 Beekman St., N. Y.
Metropolis Sheet Metals & Stove Repairing Co., Newark, N. J.
Troy Nickel Works, Troy, N. Y.

Stove Trimmings, &c.
Fanner Mfg. Co., Cleveland, O.
Shields, W. H. & Co., Troy, N. Y.
Troy Nickel Works, Troy, N. Y.

Stove Trucks.
Howes, S. M. Co., Boston, Mass.
Tucker & Dorsey Mfg. Co., Indianapolis, Ind.

Stoves and Ranges.
Barstow Stove Co., Providence, R. I.
Beckwith, P. D., Est. of, Dowagiac, Mich.
Bergstrom Bros. & Co., Neenah, Wis.
Boynton Furnace Co., 207 Water Street, New York.
Brand Stove Co Milwaukee, Wis.
Cosby, C. H., Richmond, Va.
Dighton Furnace Co., Taunton, Mass.
Floyd, Wells & Co., Roversford, Pa.
Fuller & Warren Co., Troy, N. Y.
Giblin & Co., Utica, N. Y.
Graff Furnace Co., 208 Water Street, New York.
Hess-Snyder Company, Massillon, Ohio.
Joliet Stove Works, Joliet, Ill.
Magee Furnace Co., Boston, Mass.
Miller, Wm. Range & Furnace Co., Cincinnati, O.
Ohio Stove Co., Portsmouth, O.
Pittsburgh Stove & Range Co., Pittsburgh, Pa.
Rathbone, Sard & Co., Albany, N. Y.
Richmond Company, Norwich, Conn.
Sheppard, Isaac A. & Co., Phila., Pa.
Smith & Anthony Co., Boston, Mass.
Somerset Stove Foundry Co., Somerset, Mass.
Stamford Foundry Co. Stamford, Ct.
Walker & Pratt Mfg. Co., Boston, Mass.
Weir Stove Co., Taunton, Mass
White, Warner Co., Taunton, Mass.
Willard, Wm. G., St. Louis, Mo.

Stoves and Ranges, Gas.
Dighton Furnace Co., Taunton, Mass.
Howes, S. M. Co., Boston, Mass.
Metropolis Sheet Metals & Stove Repairing Co., Newark, N. J.
Standard Lighting Co., Cleveland, O.

Stoves and Ranges, Oil, Vapor and Gasoline.
Heath, C. C. & Co., Philadelphia, Pa.
Rathbone, Sard & Co., Albany, N. Y.
Standard Lighting Co., Cleveland, O.
Taylor & Boggis Foundry Co., Cleveland, O.

Tank Heaters.
American Radiator Co., Chicago, Ill.

Tanks, Steel and Wood.
Edwards, J. H., 59 Park Place, N. Y.

Terne Plates.
American Tin Plate Co., New York.
Taylor, N. & G. Co., Phila., Pa.

Tinners' Tools, Machines and Supplies.
Berger Bros. Co., Phila., Pa.
Bertsch & Co., Cambridge City, Ind.
Bliss, E. W. Co., Brooklyn, N. Y.
Bruce & Cook, 186 to 190 Water St., New York.
Follansbee Bros. Co., Pittsburgh, Pa.
Keene, Geo. O. & Co., Cincinnati, O.
Meurer Bros. Co., Brooklyn, N. Y.
Niagara Machine & Tool Wks., Buffalo, N. Y.
Ohl, Geo. A. & Co., Newark, N. J.
Peck, Stow & Wilcox Co., 27 Murray St., New York.
Stiles & Parker Press Co., Brooklyn, N. Y.
Weiss, H. & Co., 20 Cliff St., N. Y

Tinners' Trimmings.
Vogel, Wm. & Bros. Brooklyn, N. Y.

Tin Plate.
American Tin Plate Co., New York.
Bruce & Cook, 186 to 190 Water St., New York.
Coe, Jas. A. & Co., Newark, N. J.
Follansbee Bros. Co., Pittsburgh, Pa.
Gummey, McFarland & Co., Phila., Pa.
McClure & Co., Pittsburgh, Pa.
Merchant & Co., Philadelphia, Pa.
Meurer Bros. Co., Brooklyn, N. Y.
Osborn, J. M. & L. A., Cleveland, Ohio.
Taylor, N. & G. Co., Philadelphia, Pa.

Tinware.
Shepard, Sidney & Co., Buffalo, N. Y.

Tools and Machines, Steam and Gas Fitters'.
Curtis & Curtis Co., Bridgeport, Conn.
Saunders'. D. Sons, Yonkers, N. Y.

Torches, Plumbers.
Clayton & Lambert Mfg. Co., Detroit, Mich.

Valves.
Am. Steam Gage & Valve Mfg. Co., Boston, Mass.
Crosby Steam Gage & Valve Co., Boston, Mass.
Jenkins Bros., 71 John St., New York.
Monash-Younker Co., Chicago, Ill.
Morgan & Co., Chicago, Ill.

Ventilating Apparatus.
American Blower Co., Detroit, Mich.
Buffalo Forge Co., Buffalo, N. Y.

Ventilators and Chimney Caps.
Berger Bros. Co., Phila., Pa.
Buffalo Forge Co., Buffalo, N. Y.
Fenn, Geo. E., Boston, Mass.
Globe Ventilator Co., Troy, N. Y.
Kramer Bros., Dayton, O.
Merchant & Co., Philadelphia, Pa.
Meurer Bros. Co., Brooklyn, N. Y.
Washburne, E. G. & Co., 46 Cortlandt St., New York.

Washers, Valves, &c.
Littleford Bros., Cincinnati, O.
Marston, L. G. & Co., Boston, Mass.

Washing Machines.
Wayne, Anthony Mfg. Co., Ft. Wayne, Ind.

Water Coolers.
National Enameling & Stamping Co., 78 Beekman St., N. Y

Water Closets.
Adee, Fred. & Co., 90 Beekman St., N. Y.
Colwell Lead Co., 63 Centre St., N. Y.

Water Fronts.
Clark, Henry N. Co., Boston, Mass.

Water Heaters.
Adam, W. J., Joliet, Ill.
Kemp, C. M. Mfg. Co., Baltimore, Md.

Wind Gates.
Miner & Peck Mfg. Co., New Haven, Ct.

Window Frames, Metal.
Smith-Warren Co., Boston, Mass.

SEE ALPHABETICAL INDEX, PAGE 61.

THE METAL WORKER.

With which is Incorporated The Stove and Tin Trade Journal, The Sheet Metal Builder, and Metal.

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HELP WANTED.

First-class TRAVELING SALESMAN, familiar with tin plate and sheet metal trade, to represent us in Southern territory; one with an established trade preferred; to commence at once. American Tin & Terne Plate Company, 22 Wildey street, Philadelphia, Pa. June 14

SALESMAN, to sell as side line our tinners' furnaces and blow torches on commission basis; good field. Geo. W. Diener Mfg. Company, 14 N. Canal street, Chicago, Ill. June 14

CORNICE CUTTERS at the bench and power brake hands wanted. Apply David Lupton's Sons, Allegheny avenue and Tulip street, Philadelphia, Pa. June 14

TINNER, PLUMBER and GAS FITTER for country shop; nice town in natural gas region, with good schools and low rent; will give steady work and good wages to a competent, reliable man. Gould-Carter Company, Friendship, N. Y.

One PLUMBER and one TINSMITH belonging to the United Plumbers and Tinsmiths Union; none but good men need apply; wages, $2.50 per day, eight hours' work. 374 Main street, Ansonia, Conn. June 14

A good TINNER for inside and outside work; to a good man will give a steady job. McCombs & Eddy, Connersville, Ind. June 14

First-class PLUMBER and STEAM FITTER; must be steady and reliable; to experienced workman we have a steady position. Sheets & Knodle Company, De Kalb, Ill. June 14

A thoroughly reliable man to take charge of shipping department in a wholesale plumbing supply house; must be thoroughly acquainted with the business, competent and sober; state age, experience, reference and salary expected. P. O. Box 1096, Springfield, Mass. June 14

Competent FOREMAN in a cornice shop in New York City. "K. L.," care *The Metal Worker*, New York. June 14

An A No. 1 FURNACEMAN; must be thoronghly competent and experienced; will pay the best wages for the right man. F. J. Wilhelm, 1104 Monroe street, Toledo, Ohio. June 14

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At once, a good PLUMBER and TINNER; steady work. C. E. Martin, Potsdam, N. Y. June 14

WIRE WORKER; one who has had experience in making fire place spark guards; no one but a first-class workman and who is steady in his habits need apply; answer, giving experience, "H.," care *The Metal Worker*, New York. June 14

An experienced STOVE SALESMAN for Indiana. Bonnet-Nance Stove Company, Chicago Heights, Ill. June 14

Experienced STEEL RANGE MOUNTER. Bonnet-Nance Stove Company, Chicago Heights, Ill. June 14

SALESMEN to sell mica on commission as a side line; no samples. "Mica," care *The Metal Worker*, New York. June 14

Experienced SALESMAN to sell furnace and stove cement to furnace and stove manufacturers, enamels to bathtub and bedstead manufacturers, steel color paints and fillers to machinery and engine builders; no application considered nnless having experience and trade in these lines. "J. J.," care *The Metal Worker*, New York. June 14

First-class PLUMBERS and STEAM FITTERS, at once; state wages wanted and experience; none but sober men employed. Theo. G. Scheid, Bluffton, Ohio. June 14

Agent to carry good selling specialty to stove trade on commission. "K. G.," care *The Metal Worker*, New York. June 14

At once, a first-class PLUMBER; one who understands house heating and windmill work; none but nonunion and first-class men need apply; please state wages and give reference; ten-hour system required. J. H. Leslie, Leesburg, Va. June 14

A first-class TINSMITH by the year, at once; state experience, age and wages wanted for steady job; must be sober and steady. Box 794, Freehold, N. J. June 14

At once, a good, all around TINNER in country shop; steady employment to a good man and good wages; state age, experience, single or married, also price per week wanted. F. I. Peabody, Sharon, Litchfield County, Conn.

A first-class, all around TINNER; one who understands both bench and outside work; must be sober; steady work and good wages to right man. J. J. Brislan, 311 Broadway, Frankfort, Ky. June 14

First-class WOOD PATTERN FITTER; a good position for the right man. Box 57, care *The Metal Worker*, 1205 Fisher Building, Chicago, Ill.. June 7

Competent man to take charge of sheet iron department of a manufactory making light sheet iron tanks, racks, &c.; one who is able to lay out and mark off work and handle 12 or 15 men. Address Box L, Station B, Cincinnati, Ohio. June 7

TINNER; good, first-class, all around man in town of 2500; must be sober, industrious and know his trade; married man about 30 years old who can speak German preferred; a steady job for the right man. H. C. Mylander, Oak Harbor, Ohio. June 7

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WORKING FOREMAN; first-class wages to an up to date man; must be young, sober, a first-class mechanic in cornice, steel ceiling and all kinds of sheet metal work, and must be fast and accurate in getting his work out; also want a first-class outside cornice man who can put up any work from plans; none other will be considered. San Francisco Cornice Company, 12-20 Florida street, San Francisco, Cal. June 7

Six first-class union TINNERS; wages, 35 cents per hour; steady work for good men. Duluth Corrugating & Roofing Company, Duluth, Minn. June 7

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A good TINNER for inside and outside work; must understand furnace work and roofing; must be sober and reliable; steady job for the right man. Apply at once. Brennan & Adams, Brockport, N. Y. June 7

A competent SALESMAN to represent a manufacturer of warm air furnaces and steam and hot water heaters, to travel in the Middle West; state age and experience; good references required. Address "Furnace and Boiler," care *The Metal Worker*, New York. June 7

Two first-class SHEET METAL WORKERS conversant with all kinds of roofing and furnace work; liberal terms to the right people. "Progressive," care *The Metal Worker*, New York. June 7

PLUMBER and STEAM FITTER for work in small towns; must be competent to handle the work alone; good steady job for a sober and reliable man. West Virginia Heating & Plumbing Company, Charleston, W. Va. June 7

Immediately, a good, all around, steady workman for country tin shop; must be able to do pump work, roofing, gas pipe and tin job work, with plumbing. "Tin Shop," care *The Metal Worker*, 1205 Chemical Building, St. Louis, Mo. June 7

MODELER; a good, steady and reliable worker on steel ceilings, quick at grasping ideas; for such a man a good opportunity is offered. "M. G.," care *The Metal Worker*, New York. June 7

Two first-class PLUMBERS; strictly sober and reliable men; reference required; wages, $3 per day. George E. Bauer, Port Washington, L. I., N. Y. June 7

At once, a good, all around PLUMBER; one that understands country work; must be sober, honest and a hustler; good wages to right party. Robinson Bros., East Quogue, L. I., N. Y. June 7

A good assortment TINNER, to work by piece work; must be good on wash boilers; one that can work one or two helpers to good advantage preferred; steady work to a competent and reliable man; a young man preferred. W. F. Janeway, Columbus, Ohio. June 7

At once, a sober and reliable young man who has worked at the tinsmith trade four or five years. Box 157, Gaffney, S. C. June 7

A first-class TIN HOUSE FOREMAN: must be competent man. "Foreman," care *The Metal Worker*, Park Building, Pittsburgh, Pa. May 31

Good all round TINNER and PLUMBER; willing and able to clerk in store if necessary; steady job to right man in live, up to date town of 1200 inhabitants. O'Neill and Gilmer, Sisseton, S. Dak. M. R. O'Neill, Fargo, N. Dak. May 31

Men familiar with the putting up of metal ceilings. Lyles & Mills Metal Ceiling Company, 231 William street, New York. May 31

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As SUPERINTENDENT in sheet metal and slate work; accurate in estimates from plans; good manager of help; good executive ability; 30 years' experience. "Manager," care *The Metal Worker*, New York. June 14

By a thoroughly reliable and trustworthy young man in office of stove house, New York City preferred. "G. H. D.," care *The Metal Worker*, New York. June 14

HARDWARE CLERK, 32-37 years in builders' and general hardware; permanent position with busy, reliable firm, city preferred; references. "Permanent," care *The Metal Worker*, New York. June 14

As FOREMAN and DRAFTSMAN or SUPERINTENDENT by an experienced and first-class cornice, skylight and sheet iron worker; used to handling help to good advantage; references: ten years' experience; can start at once. Max Samlovitz, 1556 Avenue A, New York. June 14

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By a practical CORNICE and SKYLIGHT MAKER of long experience as foreman or cutter. "Cutter," 765 De Kalb avenue, Brooklyn, N. Y. June 14

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As TRAVELING SALESMAN in Ohio, West Virginia, Michigan or Indiana; in fact, am not afraid of any territory; understand thoroughly gas and steel ranges, heating and cooking stoves; 20 years' experience. "J. C. T.," Box 154, Jeffersonville, Ind. June 14

By PLUMBER; skilled mechanic; strictly sober; will go anywhere. "Plumber," 4116 Main street, Pittsburgh, Pa. June 7

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- ☐ Stenographer
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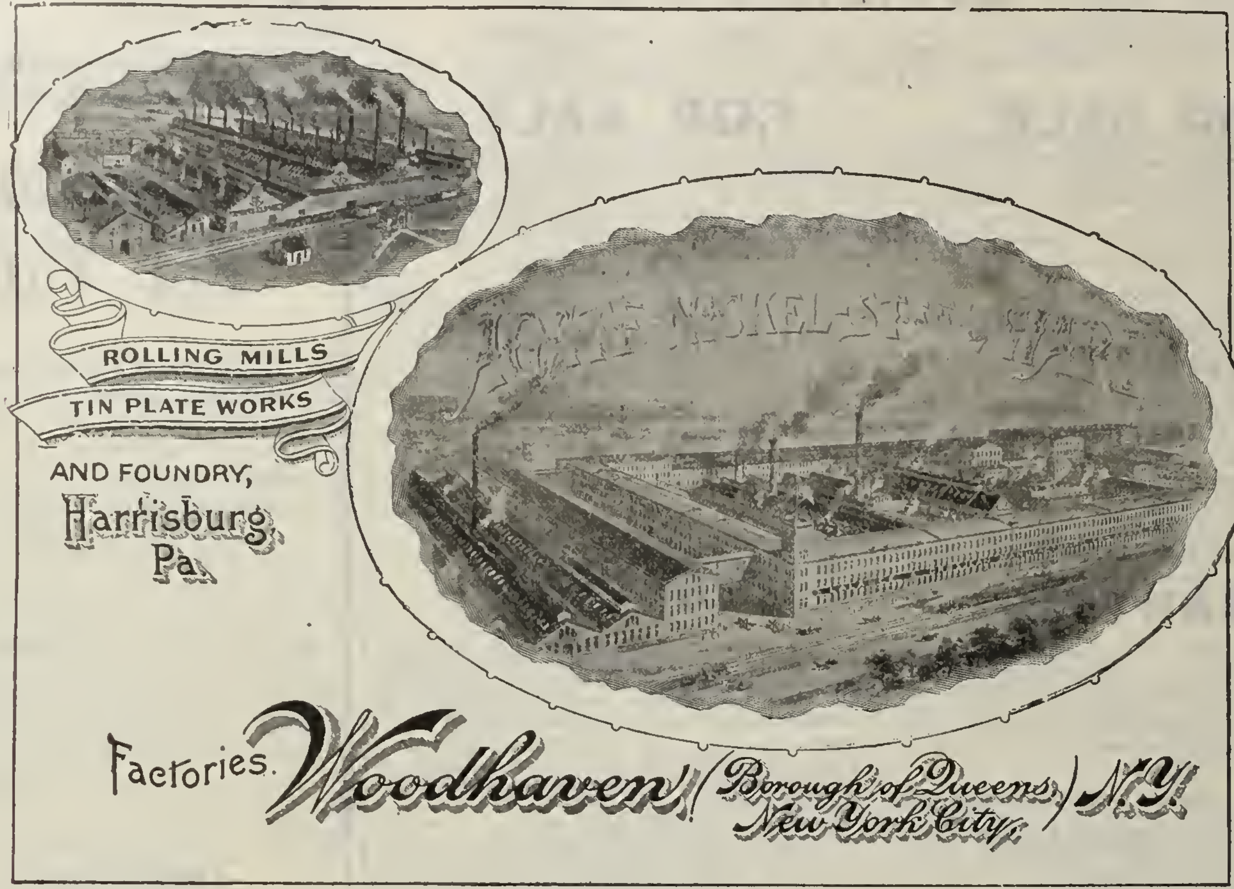

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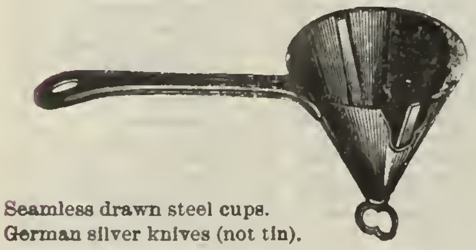

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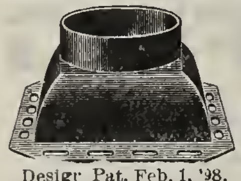

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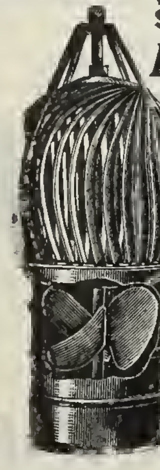

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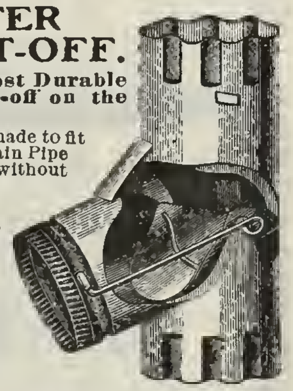

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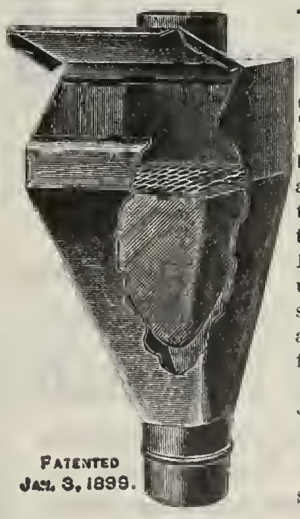

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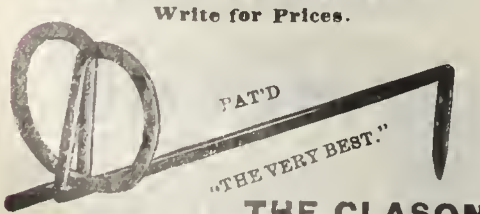

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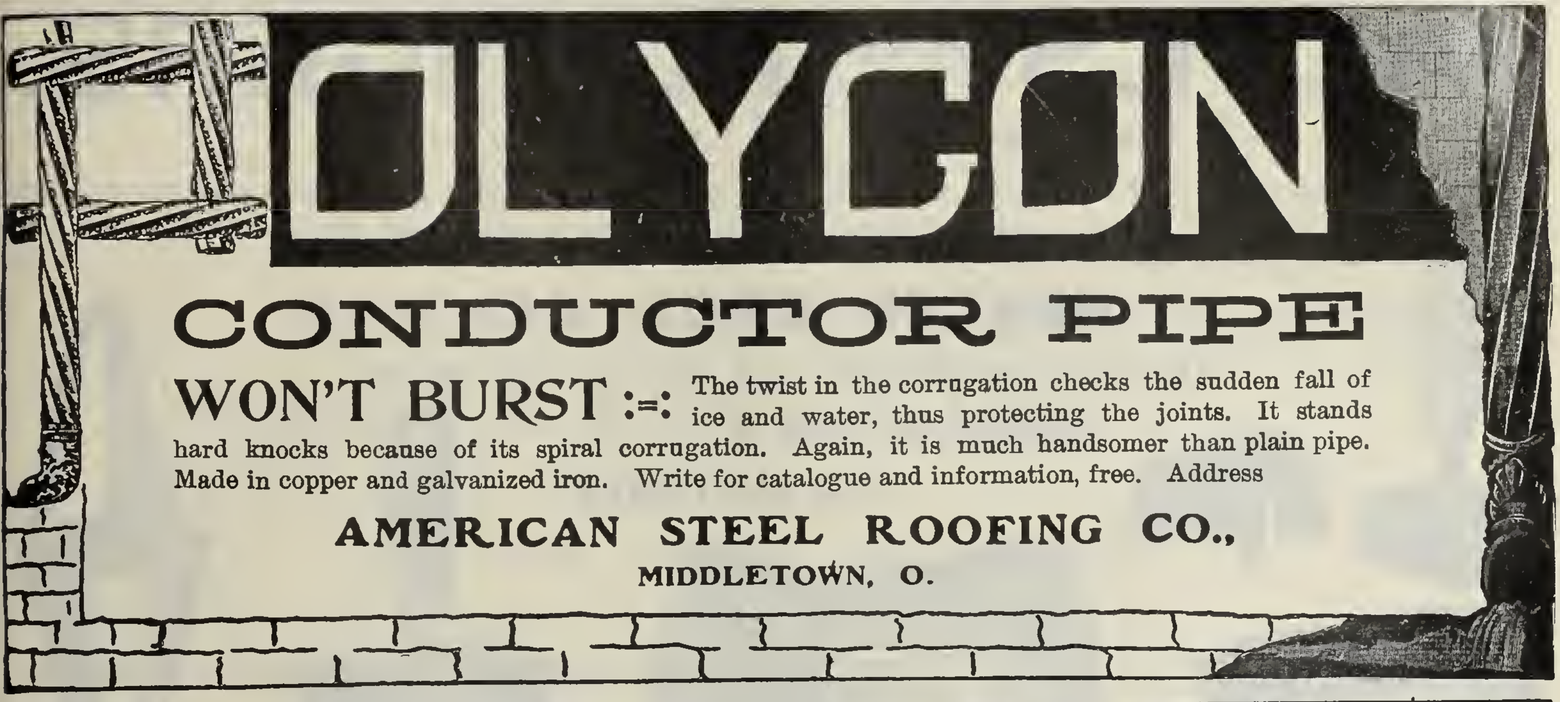

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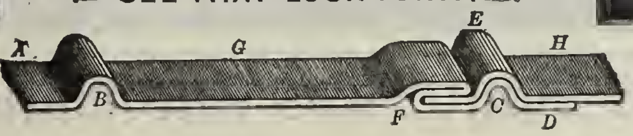

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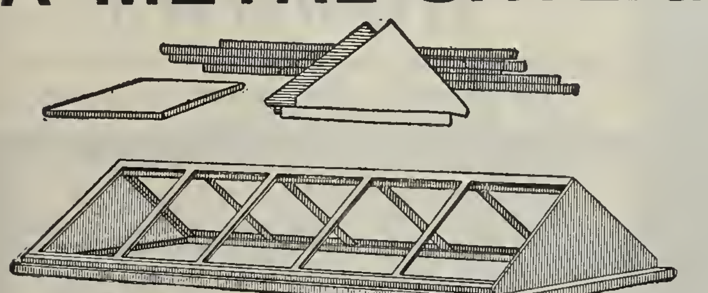

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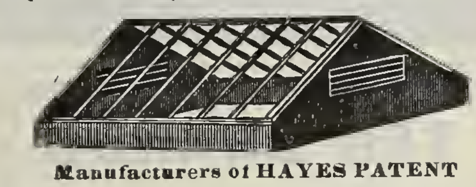

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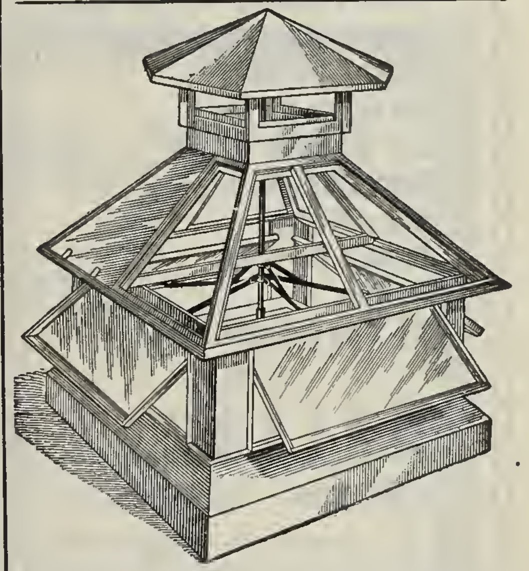

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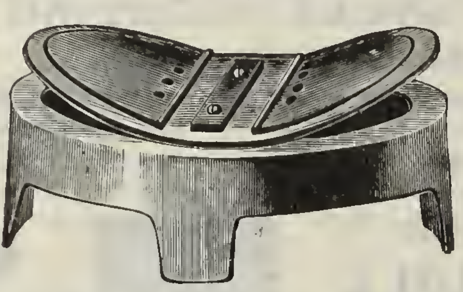

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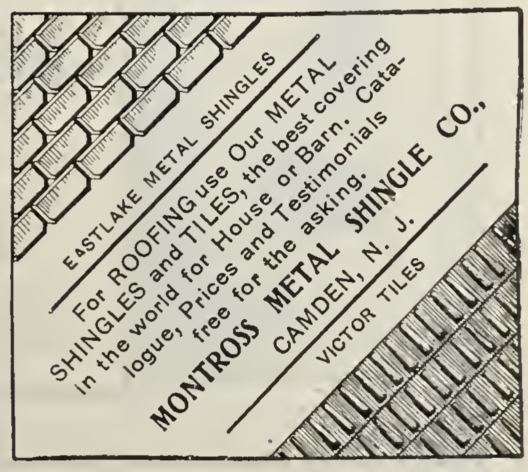

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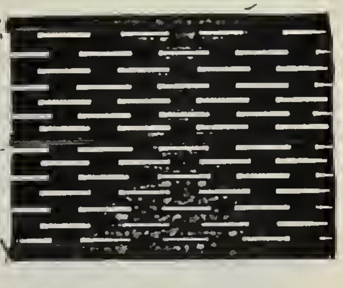

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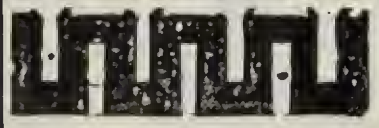

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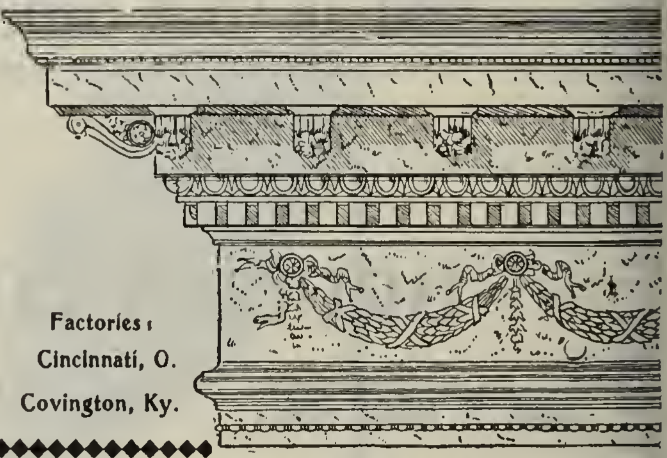

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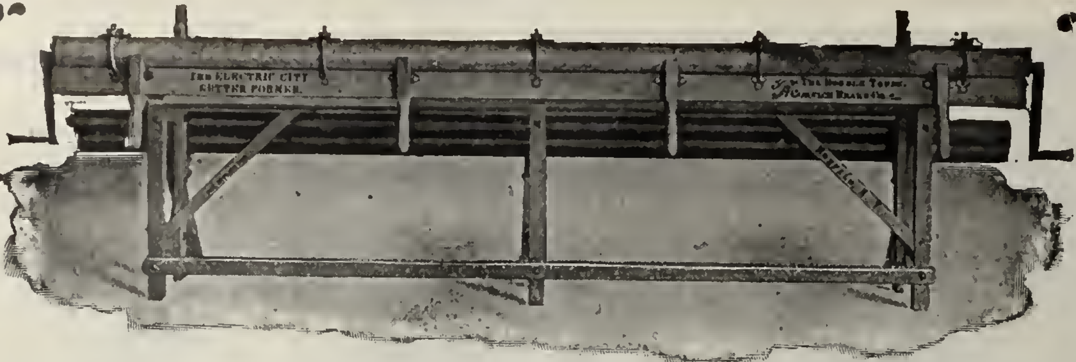
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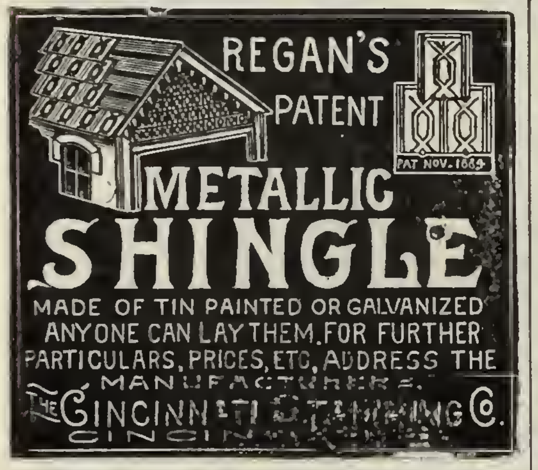
THE DOUBLE TRUSS CORNICE BRAKE CO., - 1453 Niagara St., BUFFALO, N. Y.

Our Improved Double Truss Cornice Brake is the most practical machine of its kind in the market. Let us send you a description of its merits. Our "latest" has a double edge on front leaf for making *fine* members and corrugations.



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PAT NOV. 1889

METALLIC SHINGLE

MADE OF TIN PAINTED OR GALVANIZED ANYONE CAN LAY THEM. FOR FURTHER PARTICULARS, PRICES, ETC, ADDRESS THE MANUFACTURERS.

THE CINCINNATI STAMPING CO.

CINCIN [illegible]

BUFFALO

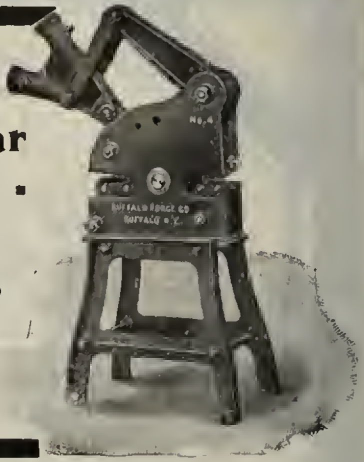
Punch, Shear and Bar Cutter Combined . .

FOR TINSMITHS', BLACKSMITHS' AND GENERAL SHOP USE.

PERFORMS the THREE DUTIES WITHOUT READJUSTMENT.

Buffalo Forge Company

BUFFALO, N. Y., - - U. S. A.



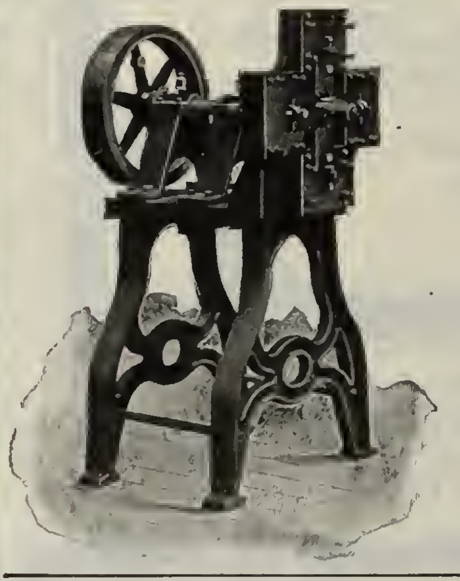
Don't put a Roof on anything

Until you get Samples and Prices of our

Portable Asphalt Gravel Roofing.

STOWELL MFG. CO.
JERSEY CITY, N. J.
114-134 Culver Ave.

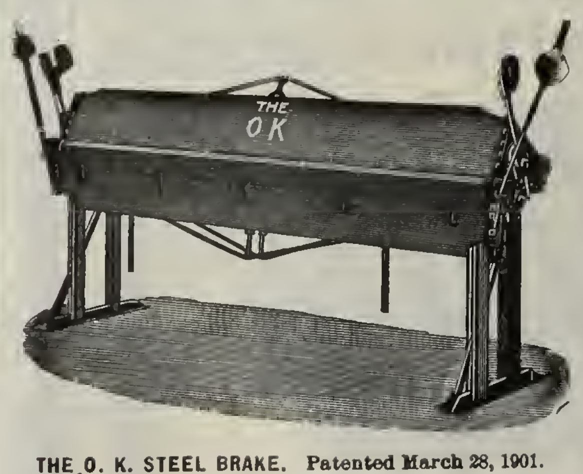
It will leave money in your pockets



The Canton Machine and Manufacturing Co.,

401-403-405 Saxton St.,
CANTON, O.

Corrugated Conductor Pipe and Eave Trough Machinery, Automatic Conductor Pipe Edging, Power Conductor Pipe Drawing-in, Slip Joint Eave Trough, Wire Eave Trough Hanger and Nested Stove Pipe Machinery, Power Paint Mixers and Mills, Steel Eave Trough Hanger Dies and all kinds of Sheet Metal Cutting, Forming and Punching Dies. Write for catalogue and prices. We build the latest improved up-to-date Sheet Metal Machinery on the market.



THE O. K. STEEL BRAKE. Patented March 28, 1901.

The O. K. STEEL BRAKE

BEATS THEM ALL.

Stronger, Less Expensive, More Durable, Works Faster, Less Freight Charges. It Is up-to-date.

SOLD BY

H. Weiss & Co., 20 Cliff Street, New York, N. Y
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Holbrook, Merrill & Stetson, San Francisco and Los Angeles, Cal.
C. J. Sullivan, 1112 Union Street, Seattle, Wash.
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MANUFACTURERS,
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COPPER Lightning Rods.

Absolute Protection from **Lightning** is given by use of our continuous copper conductors.

E. G. WASHBURNE & CO.,
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Telephone 25 Cortlandt.

Work put up or material furnished

TINNERS' TOOLS, MACHINES, and SUPPLIES. Plumbers' Tools, Tinners' Hdwe., Soldering Flux, Salts, Coppers, Rosin, Roofing Cement, Rivets, Bolts, Screws, Slaters' Tools, Second-hand Machinery and SKYLIGHT GEARING.

H. WEISS & CO. 20 Cliff St., N. Y.

NIAGARA LEVER SHEARS and PUNCHES.

Niagara Lever Punch.

NIAGARA LEVER PUNCHES.

Nos. 11 to 14 will punch ¼ in. holes through ¼ in. iron.

Nos. 21 to 24, with ratchet, will punch ½ in. holes through ⅜ in. iron; without ratchet, ½ in. holes through ¼ in. iron.

4 sizes: 4, 6, 10 and 15 in. throat.

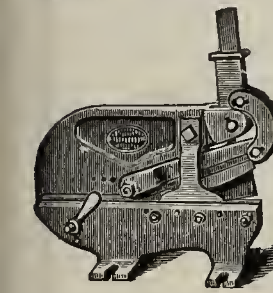
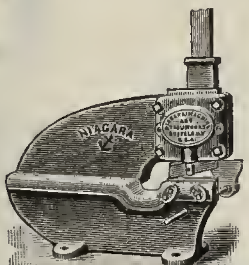


PLATE AND ROD SHEARS.

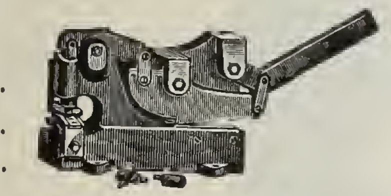
The knives are 10 in. long, will cut sheets of any length and width, as well as bars.

	For Sheets.	Flat Iron.	Rod Bars.
No. 1	⅛ in.	¼ x 3 in.	½ in.
No. 2	3-16 in.	5-16 x 3 in.	¾ in.
No. 3.	¼ in.	⅜ x 3 in.	⅞ in.



NIAGARA LEVER SHEARS.

Will cut sheets of any width and length. 3 sizes made, with capacity of ¼, ⅜, to ½ in. iron respectively.



Combined Punch and Shears.

COMBINED SHEARS AND PUNCHES.

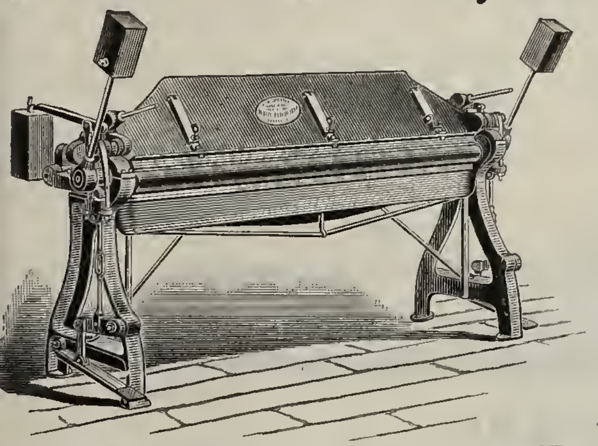
	Will punch ¼ in. through	Will cut
No. 1	⅛ in.	⅛ in.
No. 2.	3-16 in.	⅛ in.
No. 3.	¼ in.	⅛ in.

MADE BY **NIAGARA MACHINE & TOOL WORKS, Buffalo, N. Y.**

THE PECK, STOW & WILCOX CO.

New York,
—AND—
Cleveland, Ohio.

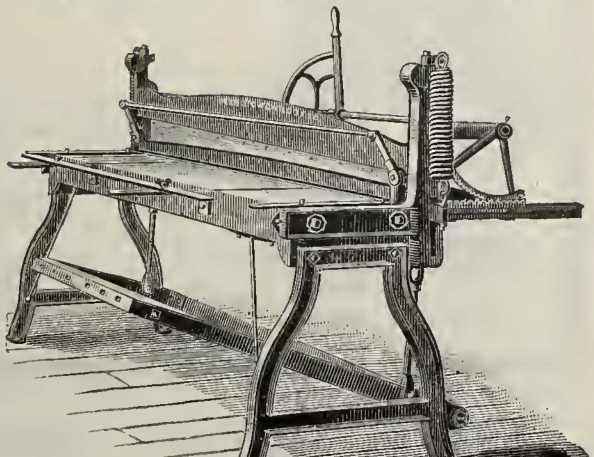
Tinsmiths' Tools of the Highest Grade.



HARE'S FOUR LEAF CORNICE BRAKE.

Hundreds sold and never a complaint. Works easily and rapidly. The universal verdict is, **IT IS THE BEST IN THE WORLD.**
96 inches long.

Our *Improved Eureka Cornice Brake.* Will bend No. 20 iron.
96 inches long.



CORNICE MAKERS' SQUARING SHEARS,
With Lever Arc, Automatic Gauge. Will cut No. 2 iron.
97 inches long.

HERCULES SHEARS

make the cutting of sheet metal of heavy gauges an easy task for the mechanic and a profitable operation for the employer. With them a man can cut No. 12 steel with one hand on the lever, leaving the other hand free to guide the stock while cutting elbows, ties and circles, as small as 8 inch radius; this is done without burring or buckling either piece, thus avoiding hammering and straightening, which add to the cost of the product. They split sheets of any width or length up to No. 12 gauge, cut wire or bar-steel ⅛ inch thick, cut off and mitre angle iron ⅛ inch thick, and do it perfectly.

WRITE FOR LOWER PRICES.

Manufactured by

CHAS. McSHERRY,
PITTSBURG, PA.

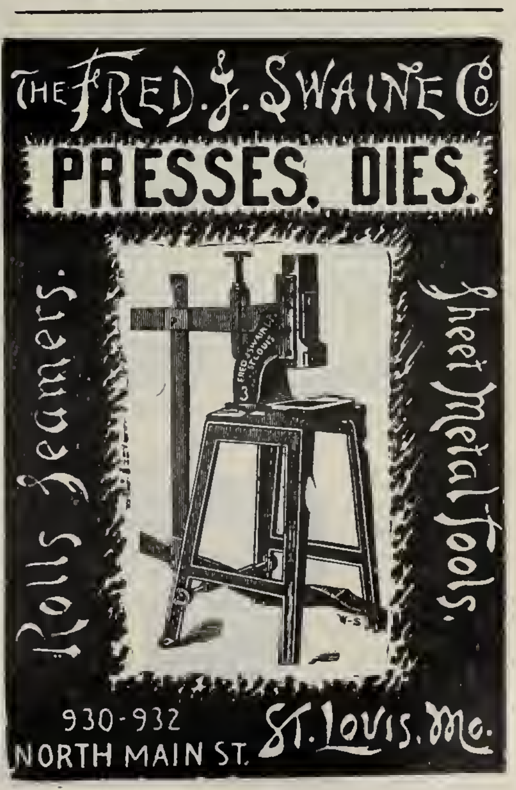
Designer and Builder of Labor Saving Metal Working Machinery and Tools.

Gummey, McFarland & Co., Philadelphia.
Richards & Co., 60 Union St., Boston, Mass.
Brown & Zortman Machinery Co., Pittsburg.

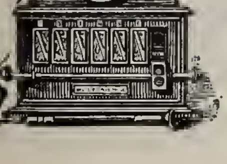
PHILADELPHIA MACHINE TOOL CO.,
445 North Darien St., Phila., Pa.

TESTING MACHINES and *SOLE AGENTS* for HENNING TESTING APPARATUS.

PRESSES and SHEARS, CORNICE PRESSES CURVED MOULDING MACHINES, etc.



THE FRED. J. SWAINE CO.
PRESSES. DIES.
Rolls Seamers.
Sheet Metal Tools.
930-932
NORTH MAIN ST.
ST. LOUIS. MO.



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Manufacturers of

Speaking Tubes, Whistles, Elbows, Oral Annunciators, Bell and Electric Wire Tubing.

Complete outfits of Speaking Tubes, Whistles, Pneumatic Bells &c. A full line of Speaking Tube Hardware constantly on hand. Factory, DeKalb Ave., near Knickerbocker, Brooklyn, L. I.

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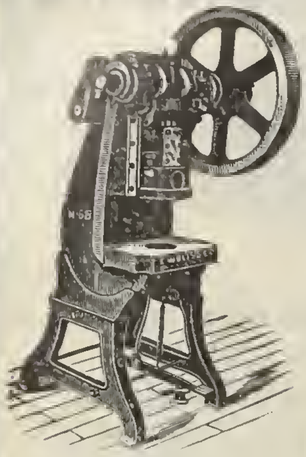
E. W. BLISS CO., BROOKLYN, N. Y., U. S. A.



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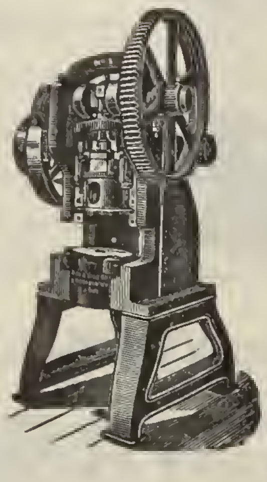

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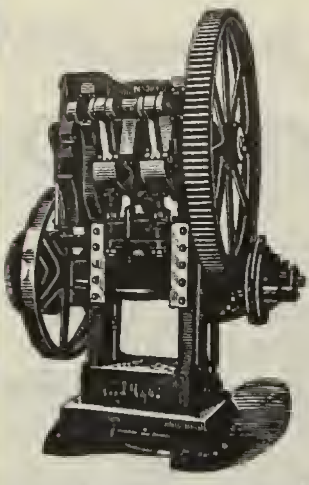
Made in 4 sizes, either with straight-sided or overhanging frame, weighing from 5,300 to 9,000 lbs.



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Made in over 15 sizes, weighing from 5,600 to 150,000 lbs.

PRESSES FOR ALL KINDS OF DRAWING OPERATIONS.

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We have been **AWARDED** the **GRAND PRIZE** at the **PARIS EXPOSITION** of 1900 for the **Unsurpassed Excellence of our Machinery.**

With our greatly increased foundry facilities we are now in a position to furnish a superior quality of castings in dry sand, green sand and loam, up to 30 tons in weight. We solicit orders for this kind of work.

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DROP HAMMERS
NORTH
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EMBOSSING
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REDUCING
DRAWING
WEST ← PRESSES → EAST
FORMING
STAMPING
TRIMMING
BENDING
S.W.
S.E.
SOUTH

WE ARE SENDING THEM IN ALL DIRECTIONS.

Correspondence Solicited. Estimates Furnished.

Also Owning and Operating **The Stiles & Parker Press Co.**

GRAY'S PERFECT

For Hip Skylight.
" Gable Skylight.
" Single Pitch Skylight.

Also chart showing lengths to cut bars. Made on Heavy Blue Print Paper.

PRICE, PREPAID, $3.50.

A Skylight Pattern Circular with full instructions accompanying each set of patterns.

Write for Skylight and Elbow Pattern Circulars and Sample Blue Prints.

G. L. GRAY,
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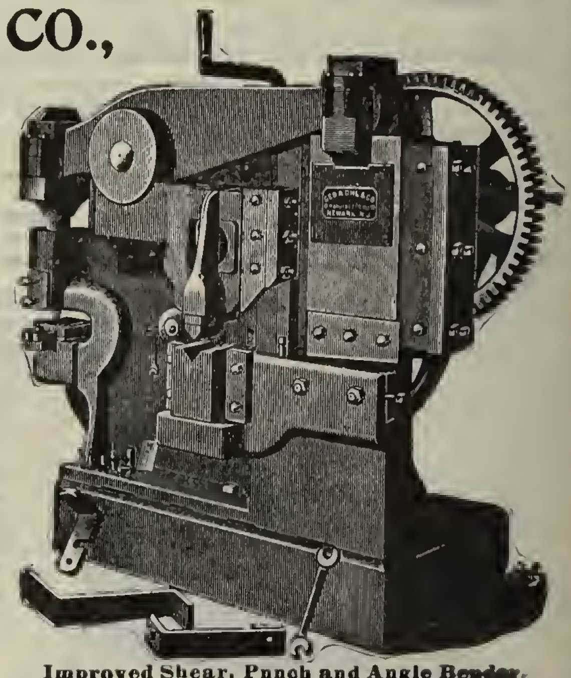
GEO. A. OHL & CO.,
157, 159, 161 ORATON ST., NEWARK, N.J.
(Telephone 873.)

Mfrs. of All Kinds of
Metal Workers' Machines,
BRAKES
(all sizes),
Heavy and Light
Squaring Shears,

Punches, Presses, Sheet Steel Lath Machines, Drop Presses, Draw Benches, and *SPECIAL MACHINERY* of all descriptions.



Improved Shear, Punch and Angle Bender.

DOUBLE LEVER PUNCH.

Capacity,
½ in. hole
in
¼ in. iron.

Send for Circular and Price.

R. M. CLOUGH,
Tolland, Conn.

Sheet Metal Tools

For any and all Purposes.
SHEARS, PUNCHES, Etc.

SPECIAL SHEET METAL WORKING MACHINERY FROM SPECIFICATIONS PRODUCED ON SHORT NOTICE.

Write for Prices and Descriptive Circulars.

BERTSCH & CO., - - Cambridge City, Ind., U. S. A.
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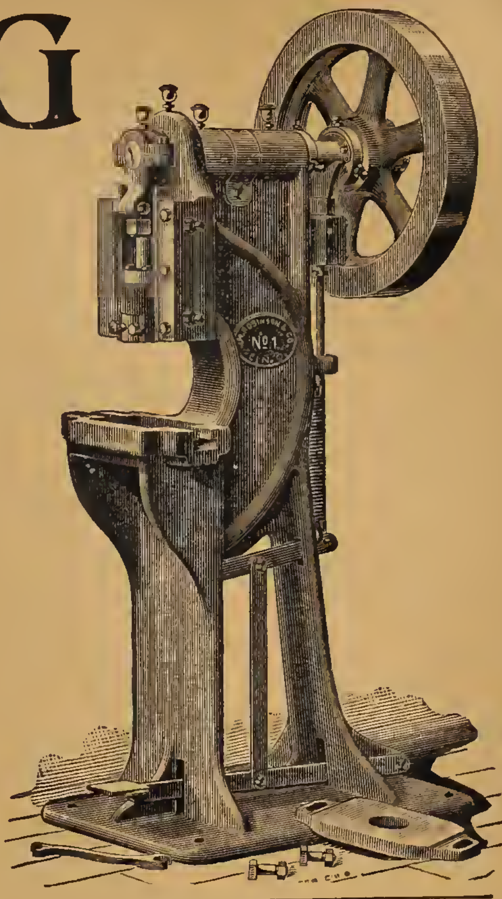
PUNCHING PRESS.

Sheet Metal Working Machinery

OF ALL KINDS MANUFACTURED BY

THE J. M. ROBINSON MFG. CO.,

225-229 W. 2d St., CINCINNATI, OHIO.



HAND POWER LEVER SHEAR.

Will shear as heavy as No. 10 Gauge Steel or Iron. Very powerful, strong and low in price.

Geo. C. Keene & Co.

Mfrs. The Keene Brake.

CINCINNATI, OHIO.

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DANZER'S LIGHTNING EDGERS, Pat. March 26, 1901.
Capacity, Foot Power 7 min. to a box; Hand Power 10 min.
Built in two sizes, 21 and 31 inches wide for hand, foot and belt power.
It will edge 27 iron and tin for roll or flat seam roofing.
Manufactured by Danzer Metal Works, HAGERSTOWN, MD., U. S. A.
FOR SALE BY ALL JOBBERS.

SHOVEL MACHINERY.
We build complete equipments and control the latest patented machines for this work.
TIN CAN MACHINERY.
We make the very latest improved machinery for manufacturing cans and pieced tinware.
STEEL RANGE MACHINERY.
Recognized leaders for machinery and dies for oil and gas stoves, and gas and steel ranges.
For further particulars write
THE TOLEDO MACHINE & TOOL CO., Toledo, Ohio, U. S. A.
SELIG-SONNENTHAL & CO., Agts., London, England.

20th Century Groover for Hand Power. We also make them for Belt Power.

20th CENTURY GROOVER, Handiest out.
Operated from one position. Automatic knock-out and *Quick Return*. Grooves 22 gauge.
Write for circular. Made by
W. A. WHEELER, Indianapolis, Ind.

IMPROVED
Patent Automatic Can Body Double Lock
SEAMING MACHINES
COMBINATION PRESSES and DIES,
SHEET METAL TOOLS.
W. J. GORDON,
218 New Street,
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BEST HAND AND POWER MACHINERY
FOR RANGE & SHEET IRON WORK
PUNCHES SHEARS

PRESSES BRAKES
EXCELSIOR TOOL & MACHINE WORKS
212-214 SPRUCE ST. ST. LOUIS, MO

—FAITH THAT WILL MOVE MOUNTAINS.—Oom Paul Kruger doesn't believe that the Lord is always on the side of the most mules. "The Lord will help us in the end," he says. "We will win."—*Kansas City Journal.*

—AND a New Jersey man, 129 years old, ascribes his long life to the fact that he never ate or drank an egg in his life. The recipes for longevity are interesting, but they are remarkably various.—*Exchange.*

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Mountain Lodge
OR
Sea Shore Cottage

A little heat is required to take off the chill in the early morning or evening. The Bay State Franklin Stove is especially adapted for that purpose. Fitted for WOOD, COAL, or GAS. Two Sizes.

Barstow Stove Company,

Providence, R. I.
BOSTON NEW YORK

The marked success of any particular article is usually followed by the appearance of imitations.

There are some 150 imitations of the "TAYLOR OLD STYLE" Brand of Roofing Tin.

Further comment is unnecessary.

N. & G. TAYLOR CO.,
Philadelphia,
Sole Manufacturers.

SHOW WINDOWS

ought to be well lighted, if at all. Not a single objection can be raised against the Frink system of show window lighting. The Best Stores use it.

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L. & R. WISTER & CO.,
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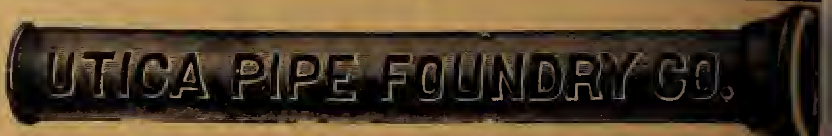
Dunbar Foundry Pig Iron.
Dunbar Connellsville Coke for Foundry Use.
American Sheet Iron Co.'s Sheet Iron.
American R. G., cleaned of uniform black color.
Dealers in all kinds of Iron and Steel Scrap.

BRUCE & COOK

TINNERS'
TOOLS and MACHINES.
TINNERS' SUPPLIES

186, 188 & 190 Water Street, a
248 & 250 Pearl Street,
NEW YORK.


UTICA PIPE FOUNDRY CO.

"UTICA PIPE IS THE BEST." Cast Iron Soil Pipe. Cast Ir
Water Pipe. Plumbers' Supplies and Lead Pipe.
CHARLES MILLAR & SON CO., Selling Agents, Utica, N. Y

HUB RANGES
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If you want the best line; the line with the **most attractive** and progressive selling features, look into the merits of the

Hub
Line of Ranges.
Steam and Water Heaters;
Hot Air and Combination Furnaces.

SMITH & ANTHONY CO., Boston.

Building a Business

on meritable goods is the motto of the man who handles the Glenwood line. He knows their reputation and quality. He knows that every part of a Glenwood range or heater is fitted and finished like a piece of machinery. He knows that every Glenwood sold means a satisfied customer—that's why it's business and a pleasure to handle

GLENWOODS.

Write the Weir Stove Company, Taunton, Mass.

McCLURE'S
Genuine Charcoal Iron Redipped Roofing Tin.

McCLURE & CO.,
Manufacturers of Tin Plate,

PITTSBURGH, PA.,
211, 213 and 215 Second Ave.

PHILADELPHIA, PA.,
115 North 7th Street.

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The Metal Worker

A WEEKLY JOURNAL OF THE ROOFING, CORNICE, STOVE, TIN, PLUMBING AND HEATING TRADES.

With which is Incorporated The Stove and Tin Trade Journal, the Sheet Metal Builder, and Metal.

LVII.
BER 25.

NEW YORK AND CHICAGO, JUNE 21, 1902.

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SINGLE COPIES 5 CENTS

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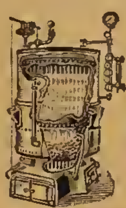
MILLER'S
REVERSIBLE
RATCHET DIE PLATES
With Hill's Solid Dies ⅛ to 3 inches.

Especially adapted for Threading Wrought-Iron
Pipes in Cramped Positions, as in Trenches, or in
Corners where lack of space forbids the Use of the
Ordinary Tools of this class.

OUR
BLUE
CATALOG "F"
OF
ENGINEERS'
AND
STEAM
FITTERS'
TOOLS
WILL
INTEREST
YOU.

ALWORTH MFG. CO. *Boston, 128 Federal St.*
New York, Park Row Bldg.



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FOR STEAM AND HOT WATER HEATING.
INVESTIGATE FOR YOURSELF.
Send for Catalogue and Prices.
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77 Oliver St., BOSTON. Prudential Bldg., ATLANTA, GA.

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AMERICAN STEAM and ALTITUDE **GAUGES,** POP SAFETY **VALVES.**
Heating Specialties. American Steam Gauge & Valve Mfg. Co., Bismark St., Boston, Mass., U. S. A.

DON'T STICK

a customer on a poor cooking range. There is so little difference in price between the Excelsior and the next grade that it will not pay you to run the risk. There *is* no risk on the Excelsior. It is made right, sold right, works right, and is all right. So are Paragon Furnaces.

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nufacturers of all varieties ot
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in and Painted
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" Crimped
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fined Iron
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Steam Specialties.
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EVATOR VALVES,
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NK TEMPERATURE CONTROLLER and
A No. 1 DAMPER REGULATORS
NOISELESS BACK
PRESSURE VALVES
PUMP GOVERNORS,
STEAM and OIL SEPARATORS
KIELEY AND MUELLER,
-17 W. 13th St., - NEW YORK.

If the appearance of a stove appeals to the housewife it is more than half sold.

Stewart Ranges

have handsome exteriors, and then they are good bakers.

FULLER & WARREN CO., Troy, N. Y.

This Ad. changes every week.

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MATERIAL FOR DRYING PURPOSES.
Write for prices to John Sommer's Son, 855-365 Central Ave., Newark, N. J.

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GLOBE and ANGLE VALVES, IRON and BRASS.
All working parts renewable without taking the valve from piping. All parts interchangeable. Guaranteed not to leak at high pressure. Send for circular.
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JENKINS BROTHERS' VALVES
Perfectly tight under all pressures of steam, oils or acids.
Warranted to give satisfaction under the worst conditions.
Received the Highest Award **GOLD MEDAL** At the Pan-American Exposition.
Insist on having the genuine stamped with Trade-Mark.
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FOLLANSBEE BROTHERS CO.,
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Galvanized and Black Sheets.
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FOUR WINNERS:
Follansbee Pure Iron Old Style,
Scott's Extra Coated,
Old Reliable Redipped,
Lionel Old Style.

Philadelphia, 133 Arch Street.
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Women grow enthusiastic over things they like—tell others—good advertising for you!
Magee
RANGES & HEATERS
MAGEE FURNACE CO
BOSTON

ROUND OAK
STANDARD of AMERICA

Does it look
anything like flying
in the face of
Providence
to offer
your customers
cheap "air tights"
"Hot blasts"
and kindred heaters
when for a few
dollars more
you can supply
them
with the best
heating stove
in the world

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Round Oak?**

one that will last
say twenty years
and burn
"slack" soft coal
hard coal, coke
or wood
and give more heat
and make more
satisfied customers
than any other
heating stove
ever offered for sale.
If not sold in
your town
it will pay you
to get hold of it.

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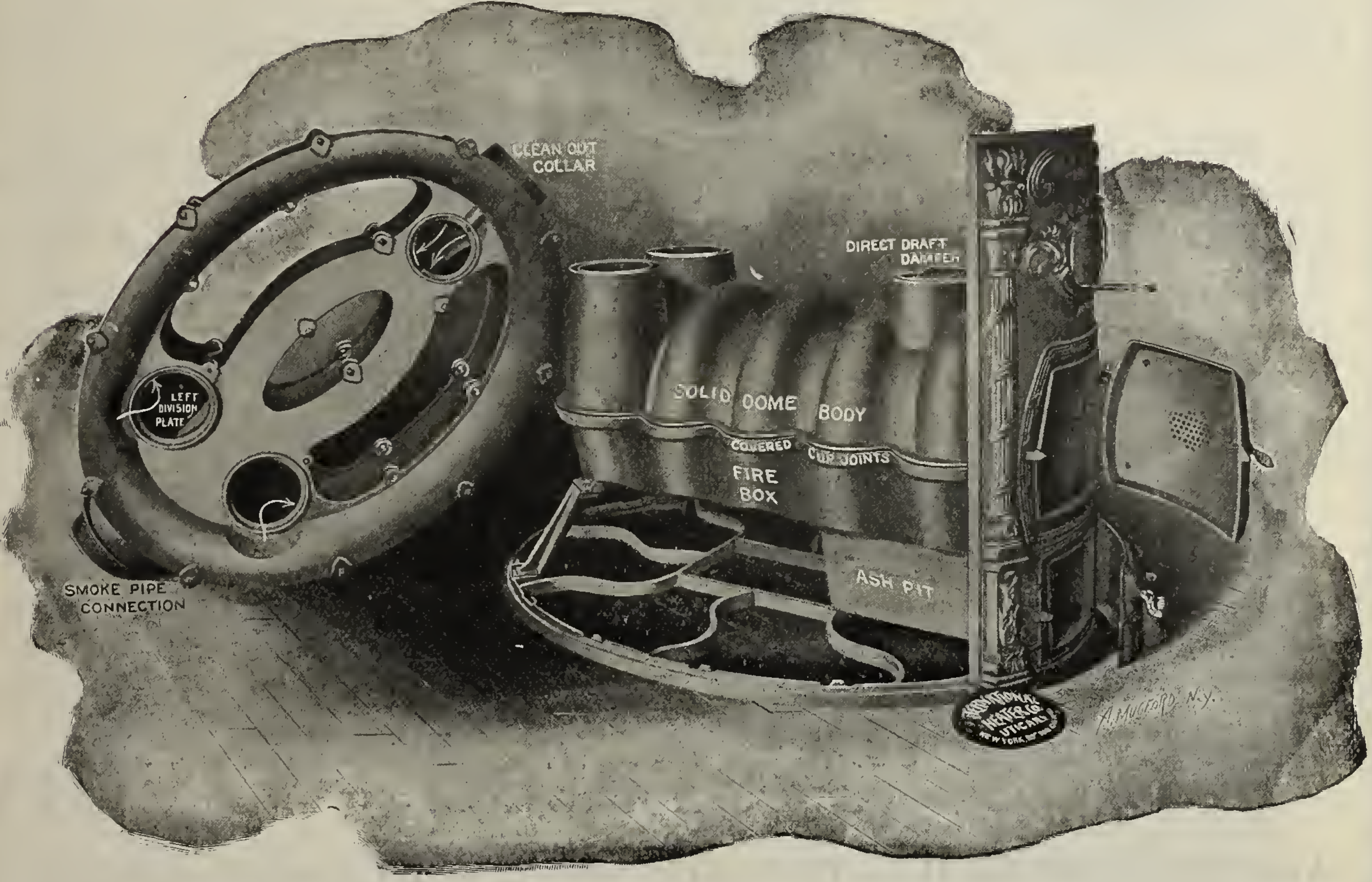
Makers of Good Goods Only DOWAGIAC, MICH.

The International Wood Furnace

HAS

A Radiator that *is* a Radiator.



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OF FIRE TRAVEL.

Powerful Beyond Precedent.

Indestructible Connections.

INTERNATIONAL HEATER CO.,

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LARGEST MAKERS OF HEATING AND LIGHTING APPARATUS IN THE WORLD.
OUR CATALOGUE WILL INTEREST YOU.

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IN FOUR SIZES.

Brick or Cast Linings. Not a cheaply constructed Steel Range (of w
there are so many on the market), but one made of the BEST MATERIA
by EXPERIENCED WORKMEN, and DESTINED TO LAST A LI
TIME. Made in the "GARLAND" way, upon honor, and safely rec
mended to be the quickest and most even baker, as well as the m
economical and durable Steel Range ever offered for the price asked.

...The Oven is Large...

And provided with our patented ALUMINIZED OVEN-LINING, wh
renders it at all times bright and clean.

Has "Aerated" Oven

Admitting FRESH HEATED AIR, which greatly improves the quality of the food. Covers and centres are seated in interchangeable pan-top frames. Slicer-door in front, enabling user to light the fire easily and also to clear the grate from the bottom. All exposed parts are protected with ASBESTOS. Broad smooth hearth. MOUNTED UPON LEG BASE.

A new and thoroughly satisfactory Range that differs from the conventional Steel Range in every respect and is a decided specialty.

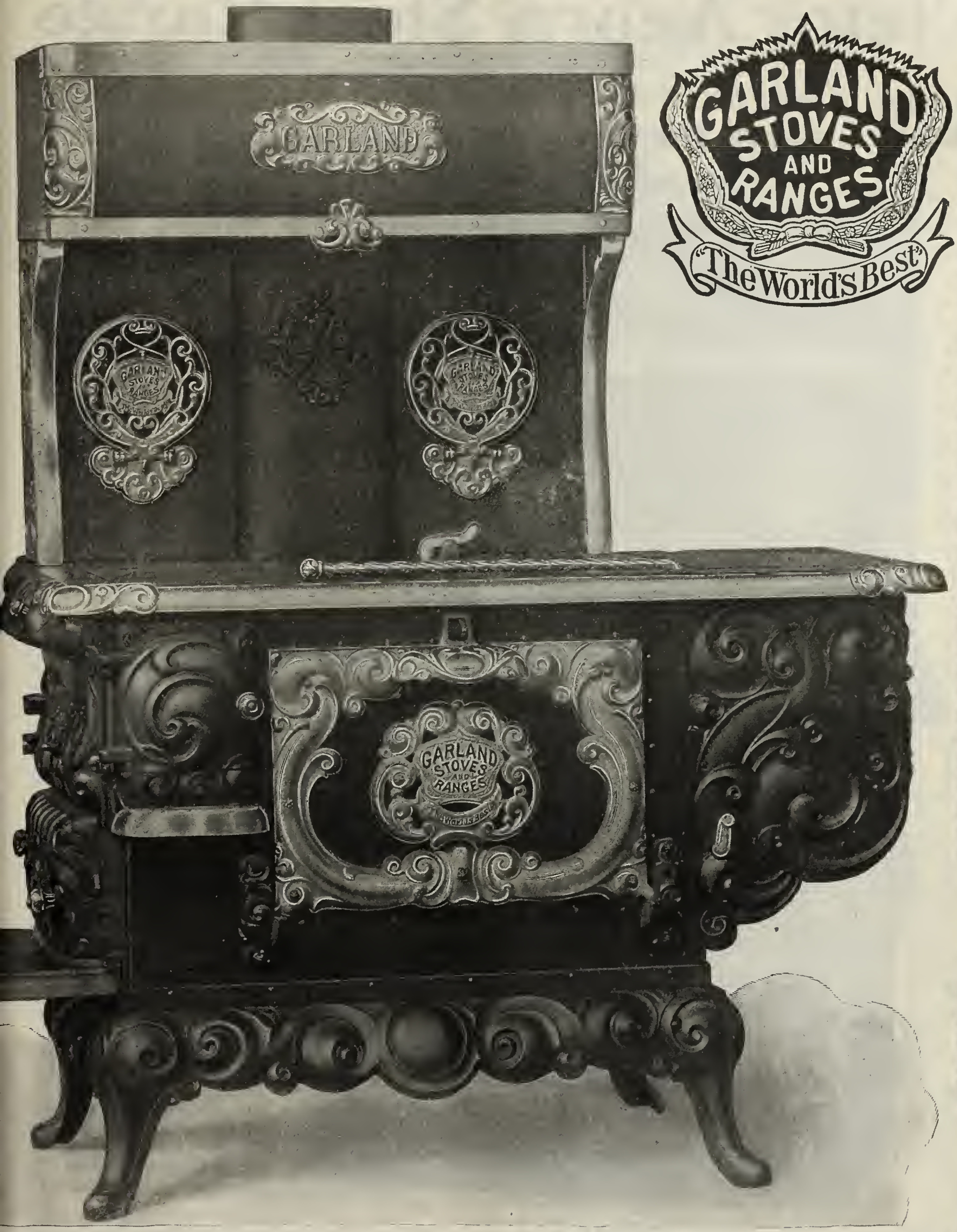
First Prize, Buffalo, 1901

The Michig

Largest Makers

DETROIT.

GARLAND STOVES AND RANGES
"The World's Best"



“ SUNRISE-GARLAND,” A Four-Hole Steel Range. For Coal or Wood.

n Stove Company,

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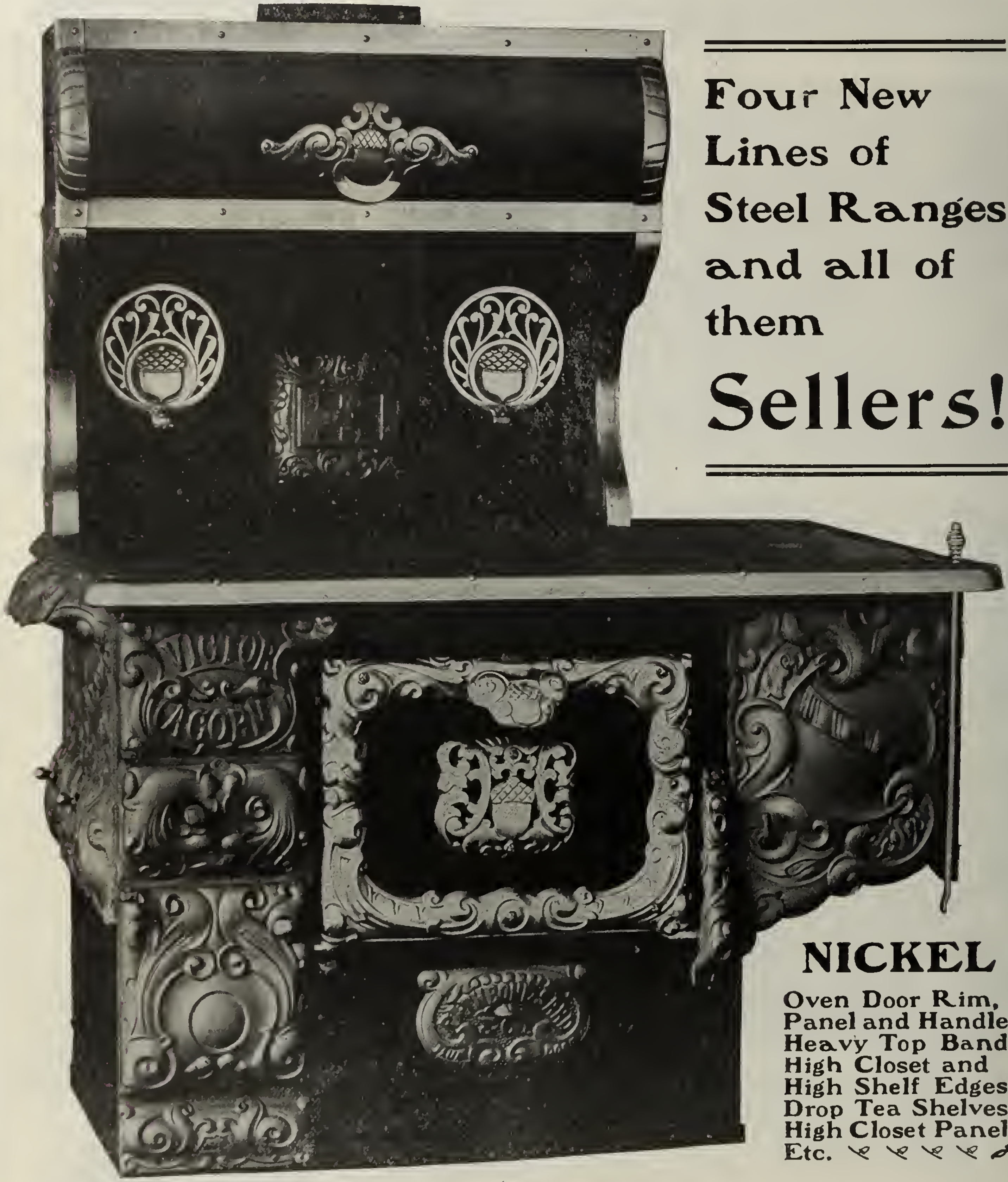
Victor Acorn Steel Range

Popular Grade, Six Holes, Made in 14, 16 and 18 Inch Ovens.
Pouch Feed, Duplex Grate. For Coal or Wood.

Four New
Lines of
Steel Ranges
and all of
them

Sellers!



NICKEL

Oven Door Rim,
Panel and Handle,
Heavy Top Band,
High Closet and
High Shelf Edges,
Drop Tea Shelves,
High Closet Panel,
Etc.

One of the NEW SERIES Acorn Steel Ranges, shown in our *LARGE CATALOGUE No. 67*, soon to be issued. Sent on request with Express Charges Paid.

PLEASE ASK FOR IT.

Rathbone, Sard & Co.

"The Oldest American Stove Makers."

Eastern Foundries, ALBANY, N. Y. Western Foundries, AURORA, ILL.

THE HARRY UNNA COMPANY, Pacific Coast Distributers, San Francisco.

QUICK MEAL

STEEL RANGES

We will soon be ready to make Fall shipments of

"QUICK MEAL" STEEL RANGES.

A number of changes have been made. We have added to beauty where it was possible; we have strengthened weak parts where they were found; we have spared neither pains nor expense in our efforts to give our customers a line of Steel Ranges that they can build up their trade with and hold it.

Every detail of construction in the "Quick Meal" Range has been carefully watched with the desire to give to our trade a Steel Range that will enable them to meet all competition.

We Inivite Comparisons.

Now is the time to compare and select your Ranges for Fall trade.

...ALWAYS STAY SOLD....

...NEVER FAIL TO SATISFY....

RINGEN STOVE C^o. SAINT LOUIS.

MONARCH CINDERELLA

A STOVE OF BEAUTY.

A JOY FOREVER.

Not only to the dealer, but to the purchaser also.

Absolutely first quality in materials.

Flue Construction most simple and effective.

Nickel Plating is silver finish.

We have an interesting proposition *to make you* this year.

WRITE TO-DAY.

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PITTSBURG STOVE & RANGE COMPANY

PITTSBURG, PA.

WESTERN SALES AGENT:-W. D. SAGER,

38 AND 40 MICHIGAN ST., CHICAGO, ILL.

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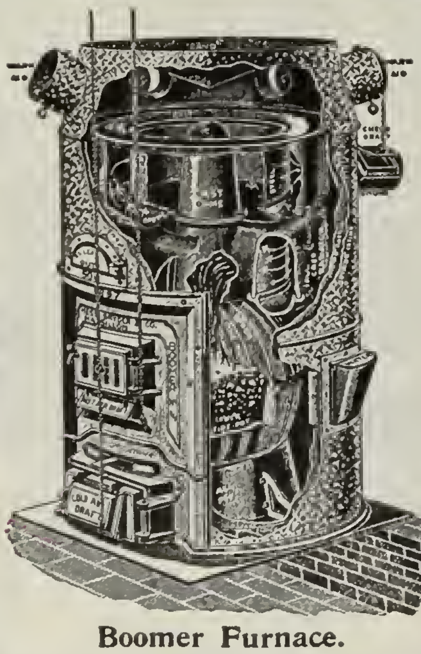
REGARDING

Boomer Furnaces.

OR

Boomer Steel Ranges



We want to state in strongest terms possible that if you want the

HEAVIEST,

MOST DURABLE,

MOST ECONOMICAL

and easiest to take care of Furnace or Steel Range, buy a **BOOMER**.

Boomer Furnace.

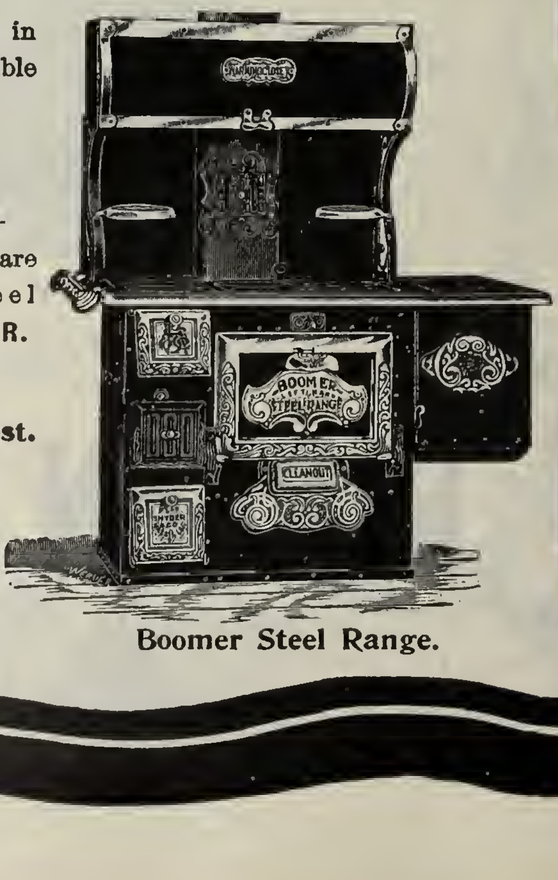
Neither time nor money is spared to make them the Best.

Buy Boomers and save your coal bills.

We invite investigation.

THE HESS-SNYDER CO.,

Manufacturers, MASSILLON, O.



Boomer Steel Range.

HOME COMFORTERS FOR

"NEW PROCESS" AND "STANDARD" OIL HEATERS.
MADE BY THE STANDARD LIGHTING CO.
CLEVELAND OHIO.
Sold by Jobbers and Dealers everywhere.

I Will Give the Public the Benefit.

Having completed patterns for my 1902 line, I will close out my last year's pattern of the celebrated

400 LB. WILLARD STEEL RANGE for $15.00.

This is Less than 4c. per pound.

They have six 8 inch lids. Oven, 17 x 21 x 12. Top Cooking Surface, 30 x 36. Large Warming Closet. 15 gallon Reservoir. Duplex Grate, Burns Wood or Coal. Lined throughout with Asbestos.

EVERY ONE GUARANTEED. BUY NOW AND SAVE 100%.
Write for Free Descriptive Circular and Testimonials.
"FIRST COME—FIRST SERVED."

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619-621 N. 4th St., - - St. Louis, Mo.

20th Century Gas Stoves
THE BEST GAS STOVE MADE.
Best Materials and Workmanship. Prices Low. Mail Orders Promptly Filled.
STOVE REPAIRS IN STOCK
FOR 2,000 STOVES AND RANGES.
Write for Prices.
THE METROPOLIS SHEET METALS AND STOVE REPAIRING CO.,
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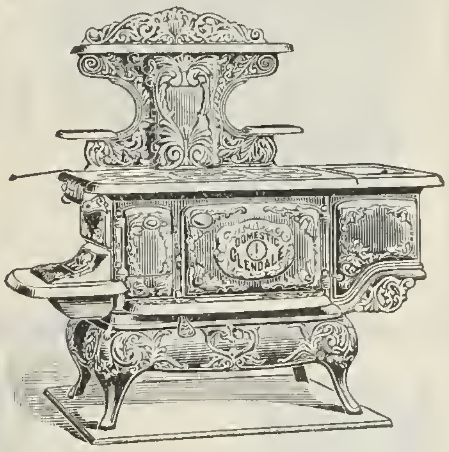
GLENDALE
Stoves and
Ranges



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SOMERSET STOVE FOUNDRY CO.,
SOMERSET, MASS.
Send for a Sample.

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THE STEAM AND HOT WATER FITTERS' TEXT BOOK.
140 Pages. Cloth.

TELLS HOW

To Estimate Radiation.
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And Many Other Important Things that Good Workmen Must Know.

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ONE DOLLAR, POSTPAID.

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1311-1315 Capouse Avenue, SCRANTON, PA
Write for Catalogue.
OUR "BLACK DIAMOND"
artificial abrasive wheels are especially adapted for
The Stove Trade
THEY ARE THE BEST.

MODEL

STOVES and RANGES

Take the lead all over the United States.

MANUFACTURED BY

The Home Stove Company,

Indianapolis, Ind.

SEND FOR PRICES.

MODEL LEADER

STEEL COOK

EXCELS THEM ALL

WINCHESTER

When cold weather comes the fitter who has put in heaters because they were cheap might better take a trip to the woods, otherwise he will see his profits disappear in repair work. Not so with those who use "WINCHESTERS." They do what they were built for, namely, to make heat. Smith & Thayer Company Boston, Mass.; 105 Beekman St., New York.

HEATER.

HOT WATER AND HOT AIR

HEATING BY COMBINATION STOVES AND FURNACES.

Suitable for Large or Small Houses, Stores, Conservatories, Barber Shops, Hotels, etc., etc.

Heat Water Quickly.
Circulation is Positive.
No Joints Inside to Leak.

THE NATIONAL PIPE BENDING CO

160 RIVER ST., NEW HAVEN, CONN.

"THE WINNER"

Patented

DOWN-DRAFT

Oak Stove

A Fuel Saver.

Burns one-half less than other Hot Blast Stoves.

FIRE POT at top of stove. Smoke pipe at base. Heat drawn to the floor. Fresh fuel being placed on top of fire, all gas and smoke are drawn through the fire to the base of the stove and consumed. Burns any kind of fuel and holds fire over night.

Has large ash drawer, which does away with dust and dirt in removing ashes.

Most economical stove on the market, as it utilizes more of the fuel than any other.

Made by **The Peck-Hammond Co.**

CINCINNATI, OHIO.

The Dangler Oil Heater, 1902

Height, 27 in.
Weight, 10 lbs.
None better.
Made of polished
Steel, with either
Brass or Tin
Tank.

Ornamental,
Durable,
Powerful and
Simple in
Operation.
For sale by
Jobbers and
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THE DANGLER STOVE & MFG. CO., CLEVELAND, OHIO, U. S. A.

WROUGHT STEEL

RANGES

LIKE THE

"PACIFIC"

Are best because they're made stronger, better, more perfect than any other similar construction. You should write for prices and secure our Catalogue.

It is made with High Closet, Rolling Front, Six Holes, for Hard or Soft Coal; is the latest, best and handsomest Steel Range ever offered, one that you can offer as simply "out of sight" compared with that sold by the peddlers. Try it.

...THE...

JOHN VAN RANGE CO.,

Warerooms:—419 ELM ST.,
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THE JOHN VAN RANGE CO CINCINNATI, O
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NO 440 PACIFIC THE J. VAN RANGE CO. CIN. O.
PACIFIC RANGE PAT AUG 12 1873. PAT SEPT 26, 82.
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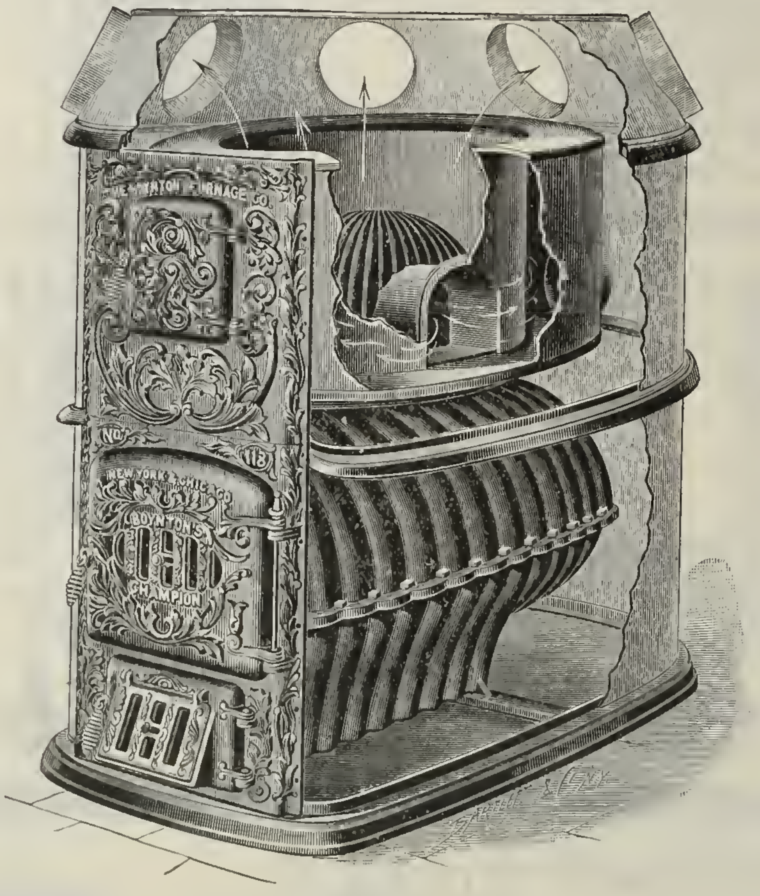
BOYNTON'S

New Champion Wood Furnace

Capacity Equal to the Largest Coal Furnace Burns 4 ft. Wood and in a Wood Country it is The Thing to Use for a School or Any Kind of a Building



FOR BRICKWORK OR PORTABLE.

In the New "Champion" the body is constructed of heavy cast iron in corrugated form, insuring great heating surface and durability, and the radiator is of heavy rolled steel plate, and so arranged as to utilize all possible heat for radiation and a full return for fuel consumed. This Furnace can be thoroughly cleaned without taking apart, has large and convenient ashpit, heavy horizontal grates, large feed door with perforated lining; in fact, comprises all the latest improved devices necessary to secure perfect operation, economy in fuel, and durability.

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THE H. B. SMITH CO.,

WESTFIELD, MASS., U. S. A.

Catalogue furnished only upon application to

Heating Contractors, Engineers and Architects

92 Pages. Size 9 x 12 Inches.

COTTAGE BOILERS.

STEAM BOILERS (8 SIZES), 550 SQ. FT. RADIATION SUPPLIED.
WATER BOILERS (8 SIZES), 900 SQ. FT. RADIATION SUPPLIED.

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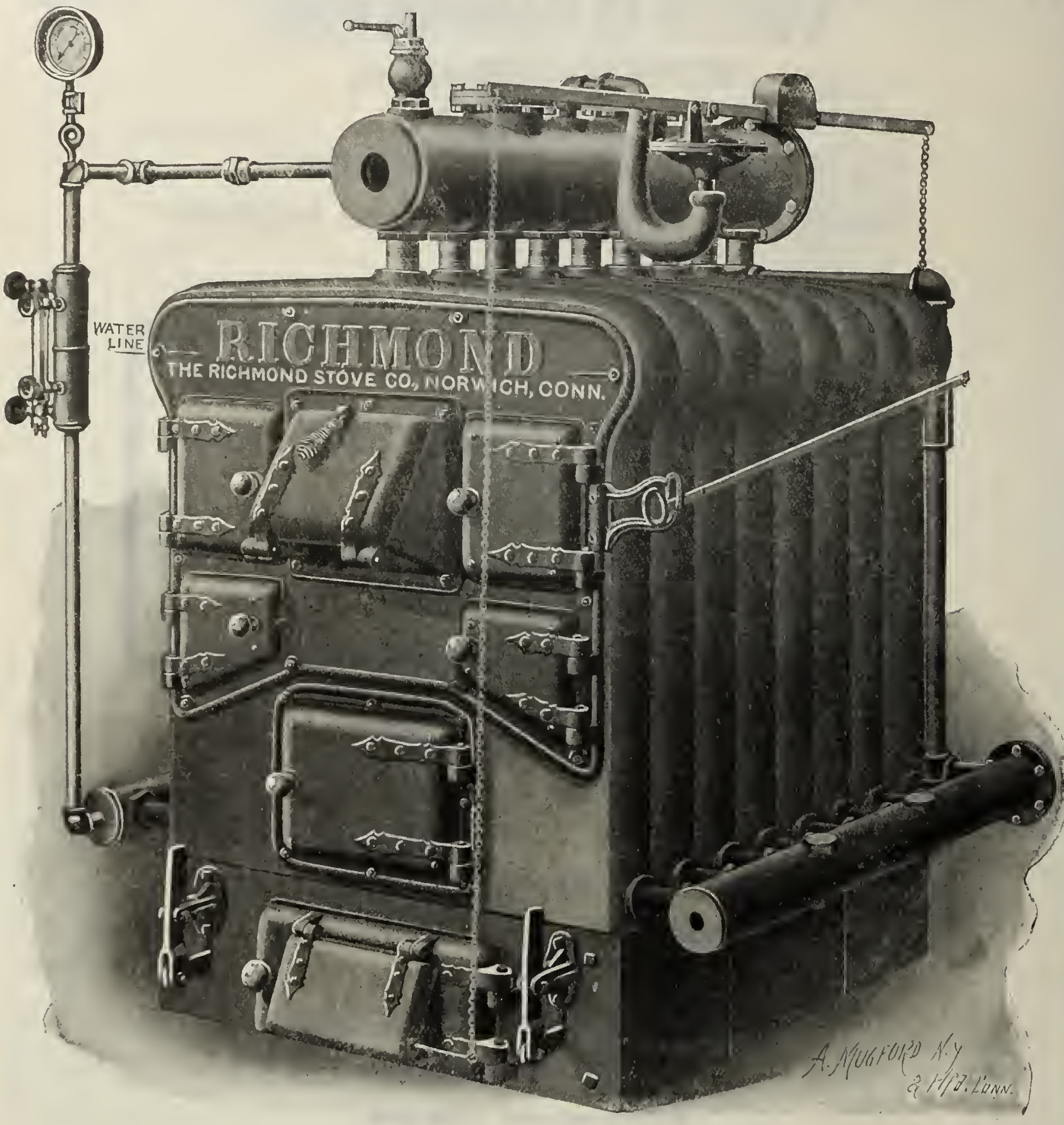
Heaters that HEAT.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RICHMOND
THE RICHMOND STOVE CO., NORWICH, CONN.
A. MUGFORD N.Y. & H'F'D. CONN.

Get in line and be up to date in the boilers you buy as you are in other things.

WRITE TO-DAY FOR CATALOGUE X,
And learn something about our New Heaters that HEAT.

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This Sign Draws Trade

THE ORIGINAL

MOORE'S AIR TIGHT HEATER

WILL KEEP YOU WARM

You will find it linked together with the names of prosperous merchants wherever you go

JOLIET STOVE WORKS

JOLIET, ILLINOIS

43

Ideal Premier Tank Heater.

Our New Ideal Premier Tank Heater

is now ready for the market, and we invite your critical examination of its various features of construction.

Send for 1902 profusely illustrated catalog.

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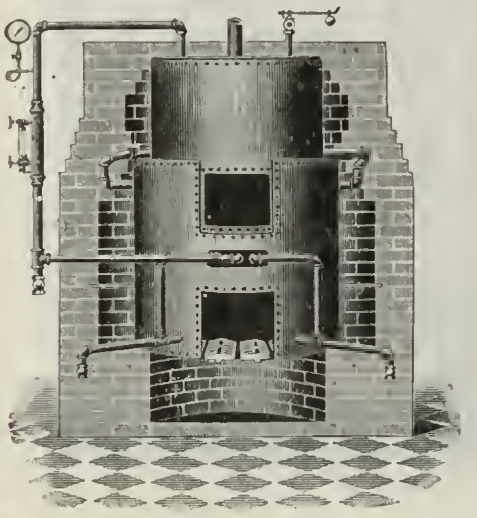

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A Steel Brick-Set Boiler for Steam and Water Heating—Hard or Soft Coal.

HAS AN ESTABLISHED REPUTATION.
SOLD ON MERIT.
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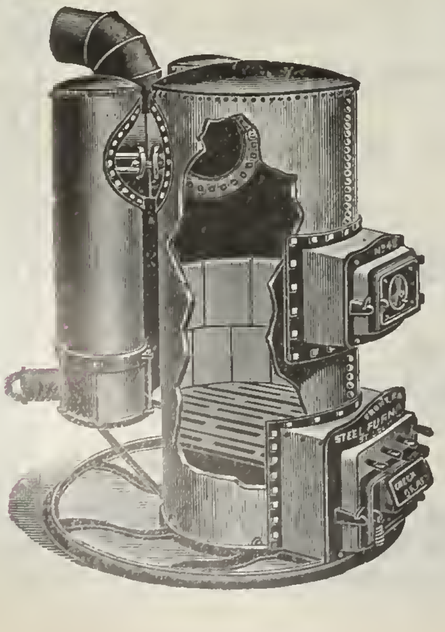


Front Rank Hot Air Furnaces

are built on vertical lines; air comes in direct contact with entire heating surface.

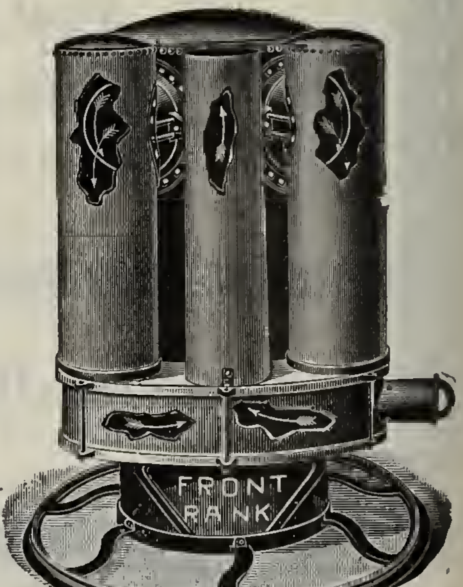
The Front Rank Fire Chamber is one solid sheet of closely riveted steel; being lined above the fire lines with genuine fire clay tiling it is the most durable made.

The radiators are very large and have an unusual area of heating surface in comparison with the size of fire pot.

These furnaces burn hard or soft coal or coke. We also make wood burning furnaces.

Send for our catalogue, it will give you a better idea of what we make.

FRONT RANK STEEL FURNACE CO.,
2301 to 2309 Lucas Ave., St. Louis, Mo.



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235 Water St.,
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The Leading Line of Heating Apparatus.

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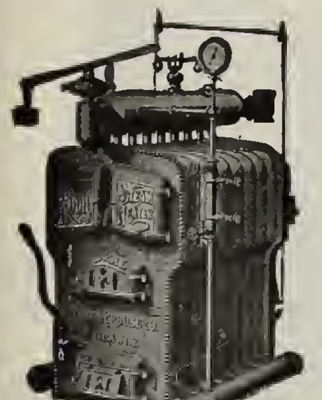
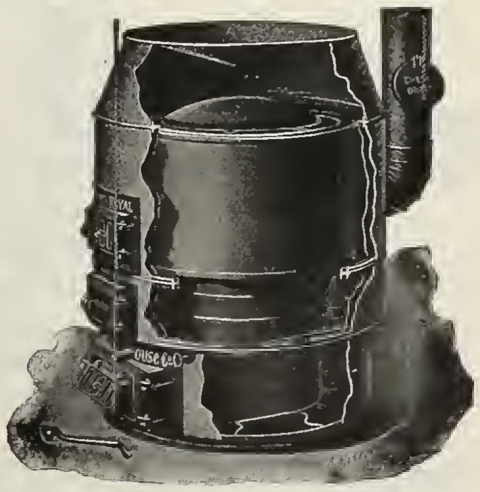
STEAM,
HOT AIR.





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AND DON'T PAY FOR IT

IF NOT THE BEST YOU EVER USED.

IT'S ABSOLUTELY THE BEST MADE.

PRICE, 65 CENTS PER CAN.

NICKEL PLATE STOVE POLISH CO.,

Manufacturers, CHICAGO.

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SUPERIOR Steel Furnaces.
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IMPERIAL Sectional Boilers.
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Double Safety Furnace Pipe.
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Our Furnace Catalogue illustrates and describes our complete line of Hot Air Furnaces—***11 different styles, 48 different sizes***—for any kind of fuel, for any climate, and for all possible requirements.

We also manufacture round and sectional boilers for steam and hot water heating, and are in a position to sell you first-class two and three column radiation at "ground floor" prices.

We are offering special inducements to dealers unacquainted with our lines, and it will be to your best interests to ask for our catalogues and prices. Do it To-Day.

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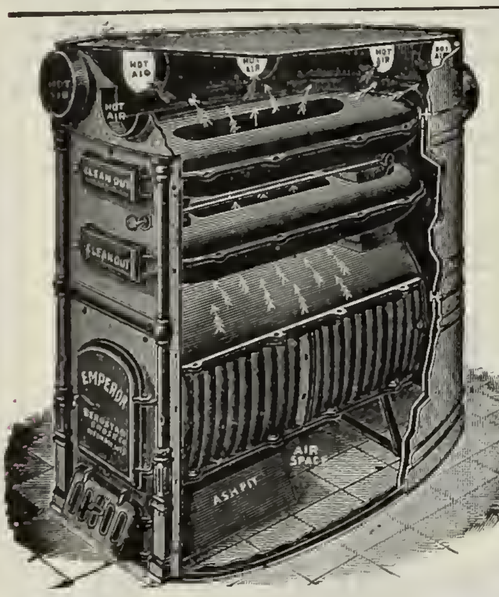

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FOR WOOD.

Simple, Safe, Durable. Economical in Fuel.

The Best and Cheapest Line of Wood Furnaces. . . .
Furnished for either Brick or Galvanized Iron Casing

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SOMETHING NEW.... **Sheet Steel Draft Registers with Screws Complete.**

PATENTED DEC. 17, 1901.

Threads are cut and disk is securely fastened
Without cotter pins or washers,
Yet it is loose or tight as wanted.

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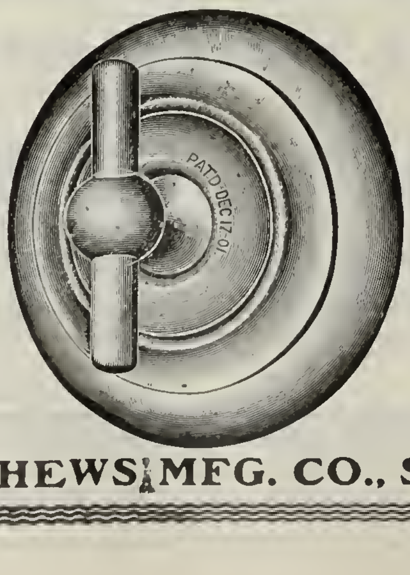

STOCK SIZES.	
2½ in.	4 in.
3 in.	4⅛ in.
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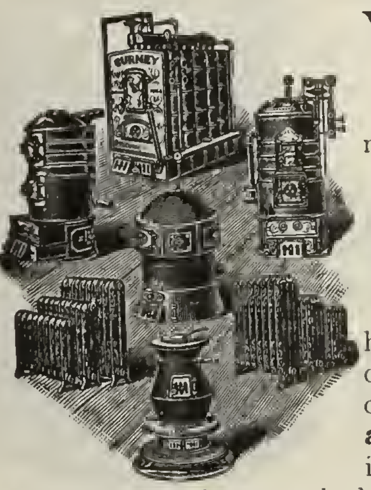
Any size made to order in quantities.

Manufactured by The H. A. MATTHEWS MFG. CO., Seymour, Conn., U. S. A.



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The department stores win out because they cater to all classes of trade. You may do the same thing with

"GURNEY" HEATERS,

BRIGHT IDEA 400 SERIES and DORIC.

For heating large buildings, halls, etc., we furnish "Bright Idea." For heating smaller buildings, residences, greenhouses, etc., "400 Series," and for dwellings, "Doric" Heaters. Thus you don't have to pass by any want. You can bid on them all—and successfully, too, because "Gurney" Heaters **will accomplish more at less cost than any heater made** Based on actual value, it's easily the cheapest one in the market. Catering to all classes of heating wants and possessing these marked excellences, you must win with a "Gurney" agency. Write for full particulars and latest catalogue

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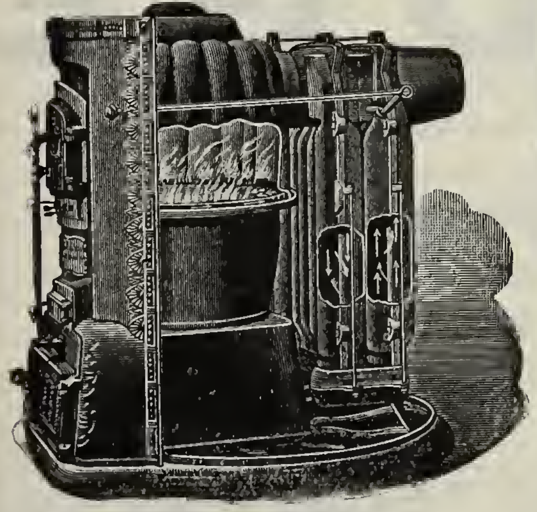

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THE FURNACE IS ***RIGHT***. THE PRICE IS ***RIGHT***. A FURNACE THAT WILL GET TRADE AND HOLD TRADE.

LET US SEND YOU BOOKLET.

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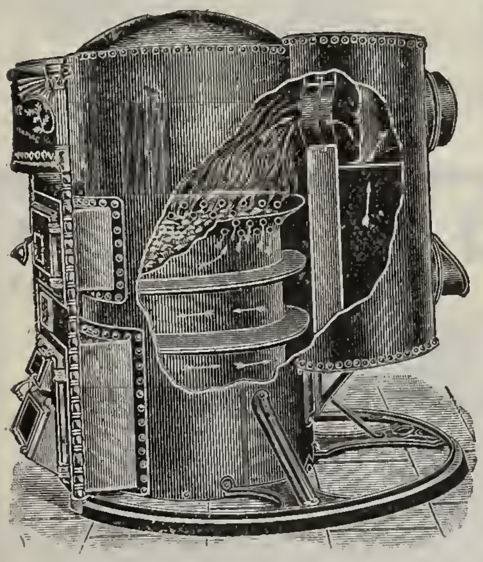
NEW YORK OFFICE, 210 WATER ST., R. W. HILLMAN, Manager.



WEIR ALL STEEL GAS AND SOOT CONSUMING FURNACE.

THE HEAVIEST STEEL FURNACE MADE.

Absolutely gas and dust tight. A great heat-producer but a fuel saver.

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THE MEYER FURNACE CO.,
1300-1304 S. Washington St.,
SEND FOR CATALOGUE. PEORIA, ILLS.

"The Handy Furnace Pipe."

MADE WITH A VIEW OF BEING SAFE.

The saving of labor in putting it up really makes it the cheapest hot air pipe on the market.

MANUFACTURED BY
F. MEYER & BRO. CO.,
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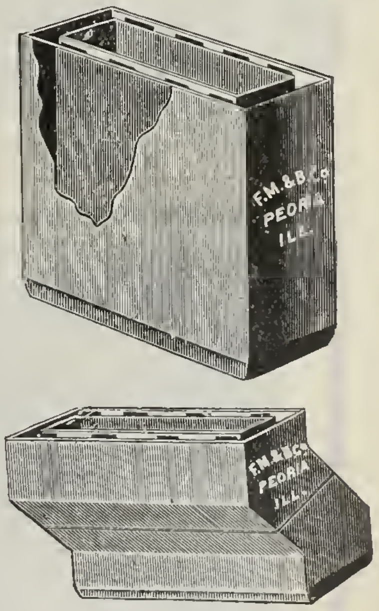

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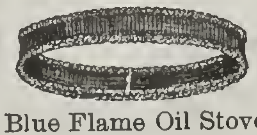
Bought from us entitle the purchaser to a 1000 Mile Book FREE on any railroad.

HAVE YOU RECEIVED ONE OF THEM?
WRITE FOR PARTICULARS.

CHAS. C. HEATH & CO., - -

HEADQUARTERS FOR

WICK RINGS

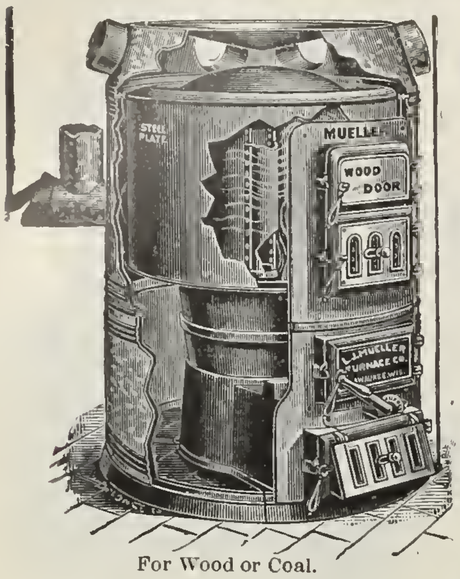


For all Blue Flame Oil Stoves made—at startling low prices.

ELECTRIC BLUE FLAME COOKS

Are what you want for Summer trade.

Philadelphia and Baltimore.



For Wood or Coal.

'Tis a Pleasure

TO DO FURNACE WORK

IF YOU HANDLE THE

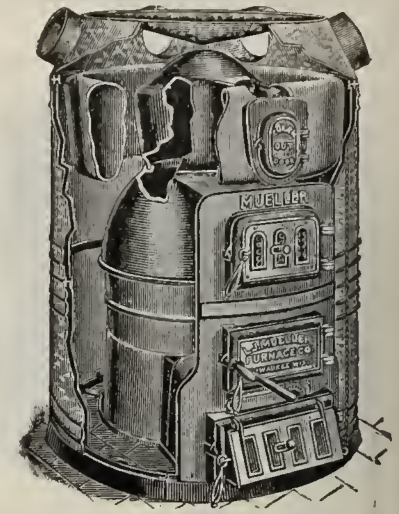
"MUELLER"

They Always Please.

WRITE FOR CATALOGUE AND PRICES.

Everything in the Heating Line.

ESTABLISHED 1857.



For Hard or Soft Coal.

190 Reed St. L. J. MUELLER FURNACE CO., Milwaukee, Wis.

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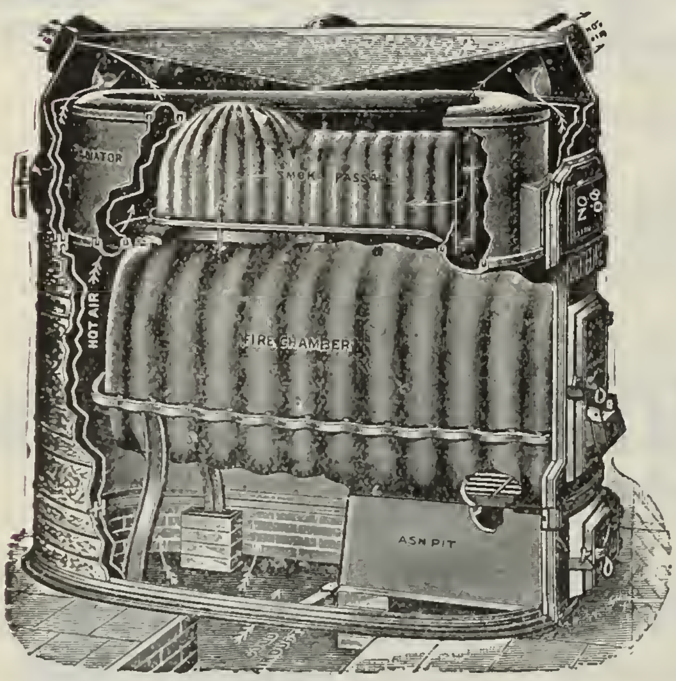
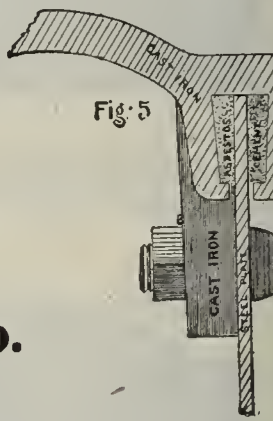


stands for best when applied to furnaces. The many dealers who have installed and the thousands of householders whose homes have been heated by our furnaces show they like the Gilt Edge, as will be seen by the testimonials they have written. Let us send you a few of them.

The Keystone Joint used in Gilt Edge Furnaces is the only permanent gas tight steel and cast iron joint on the market.

Fig. 5



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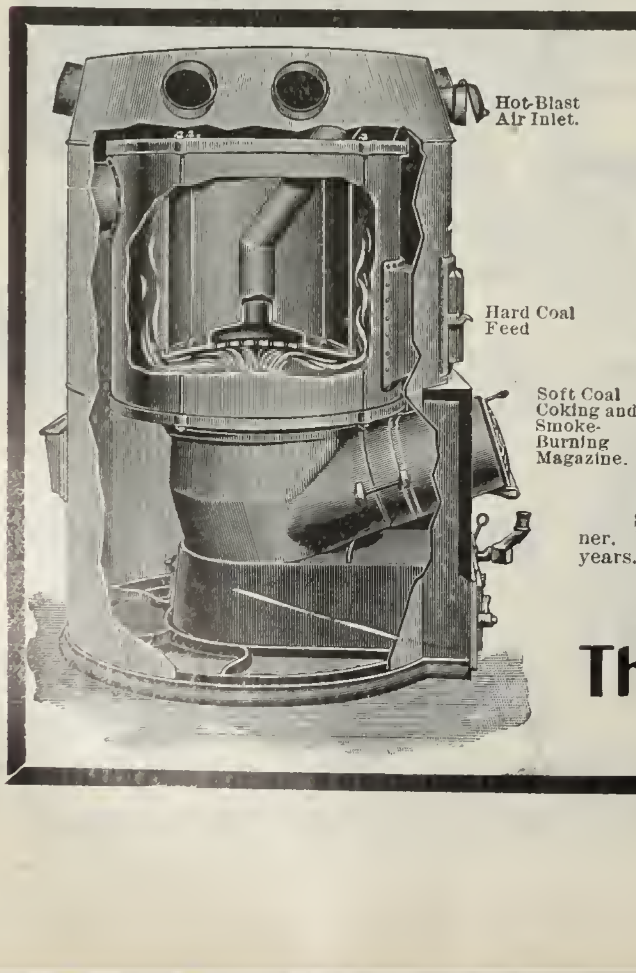
MILWAUKEE



Hot-Blast Air Inlet.

Hard Coal Feed

Soft Coal Coking and Smoke-Burning Magazine.

THE PATRIC FURNACE

IS A COMBINATION OF

GOOD THINGS

For the Dealer and User.

Scientific and Simple in construction. The Coking and Smoke-Burning is a trade-winner. Very economical. Has an efficient Hot-Blast. Exceedingly durable. A success for 29 years. Easy to sell. Easy to operate. Easy to install.

Let us send you a catalogue that tells you all about it.

The Patric Furnace Company,
SPRINGFIELD, OHIO.

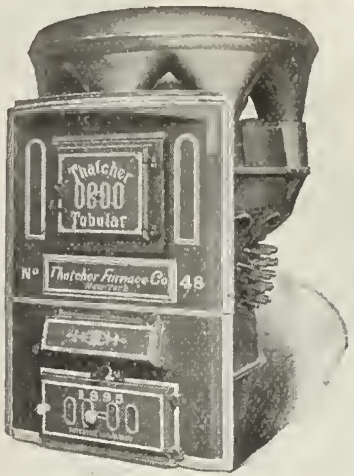
Why Sell "THATCHER" Furnaces?

Third Reason:

BECAUSE WE SELL TO YOU ONLY.

We are makers and sell only through the trade—doing no construction work or installing whatever.

It pays to handle the goods of a manufacturer who looks after your interest and who pushes his own interest with the Furnace buyer through you and for you.



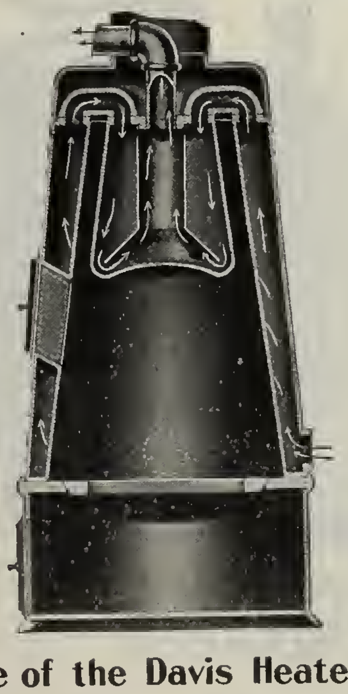
WRITE FOR CATALOGUE.

THATCHER FURNACE CO.,

Established 1850.

Warm Air Furnaces, Ranges, Steam and Hot Water Heaters.

Works: Newark, N. J. **240 Water St., New York, N. Y.**



One of the Davis Heaters.

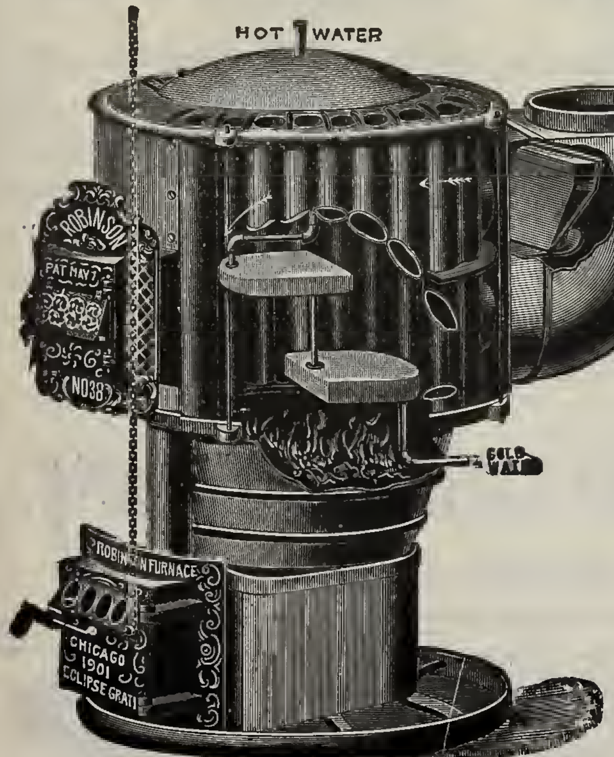
A Transformation is Coming

THE war between the coal miners and coal mine owners is the golden opportunity for pushing petroleum and its products for domestic heating which owners of oil wells will not be slow to take advantage of.

The Davis Water Heaters present a broad sheet immediately above the fire over which all the water is constantly passing, thus keeping the sheet cool. Under this large sheet is a fine place to put a petroleum burner, changing the fuel for the heater from coal to oil, retaining its economical character.

Illustrated circular sent promptly on request.

214 6th St.—DAVIS HEATER COMPANY—Racine, Wis.



The Robinson Tubular Warm Air Furnaces

give universal satisfaction whereever used.

They are up-to-date in every respect and have many special features not found in other furnaces.

WRITE FOR CATALOG.

ROBINSON FURNACE CO., Chicago.

Fall River, Mass., June 13, 1902.

Replying to your inquiry would say your No. 30 "DIGHTON" Furnace heated my house comfortably all last winter.

I was advised not to use Hot Air and had about decided it was impossible to heat my house with a hot air Furnace after trying two other Furnaces, one the same size, and one a size larger than your No. 30 "DIGHTON."

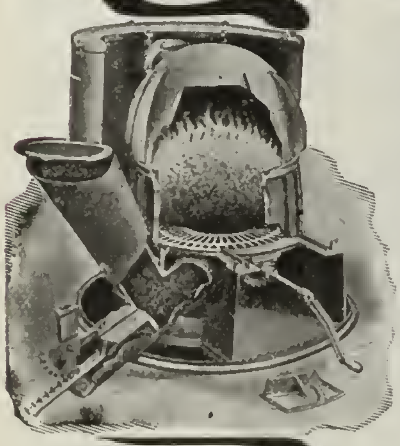
Yours respectfully,

The house referred to above is very large and exposed to severe winds.

The owner strongly favored Furnace heating but had about decided to have a hot water system installed when some one told him about the "DIGHTON" Furnace.

While our inquiry referred more particularly to the amount of fuel used, he evidently considered that of no great importance, and we have since learned that he did not care to take the trouble to look the matter up, as the quantity of fuel didn't matter providing his house was comfortably heated.

DIGHTON FURNACE CO., Taunton, Mass.



IF YOU ARE NOT SELLING THE

Peck=Williamson Underfeed Furnace

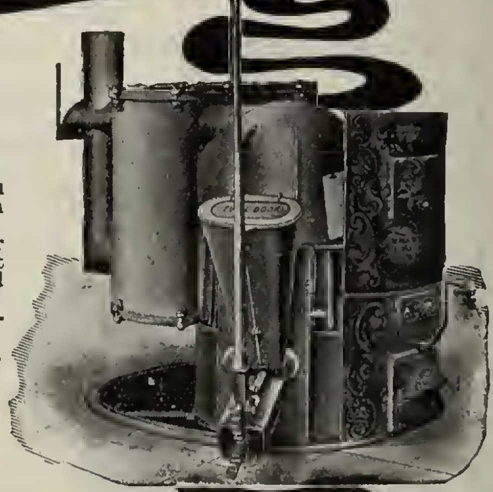
you have not the trade and are not making the money you might Just a pull or two of the lever feeds the new coal from underneath.

The Underfeed Furnace consumes less fuel than any other furnace ever built. The coal is burnt more slowly. All the heat units from it, as well as from the smoke, are utilized and all smoke eliminated.

Our handsome booklet explains its splendid heating qualities and coal saving.

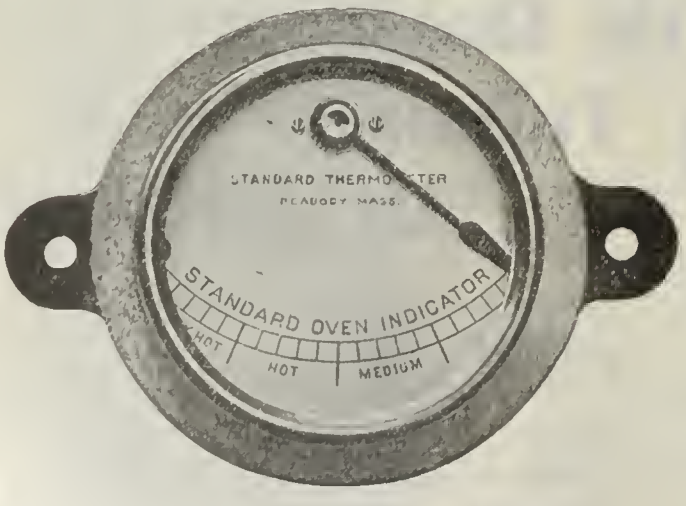
You may have this booklet and our special plans for selling. Ask for booklet about our Laundry Dryer also.

THE PECK-WILLIAMSON COMPANY,
CINCINNATI, OHIO.



The Helios-Upton Co.'s STANDARD Oven Indicator

First on the Market. 150,000 Sold.



430 FLAT BACK.
3 inches in diameter.

has a dial graduated in the simplest possible manner, as can be seen. This graduation was adopted because every oven has its own peculiarities, and an indicator adjusted to one oven might be incorrect for another. The *Standard* can be adjusted to any oven and has no complicated parts. Made in 3 styles.

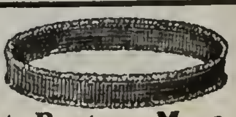
Send for circular.

HELIOS=UPTON COMPANY,
Peabody, Mass., U. S. A.

STARTING RINGS

For All Kinds of BLUE FLAME STOVES.
Small size, 40c. per doz. Medium size, 55c. per doz.
Large size, 75c. per doz.

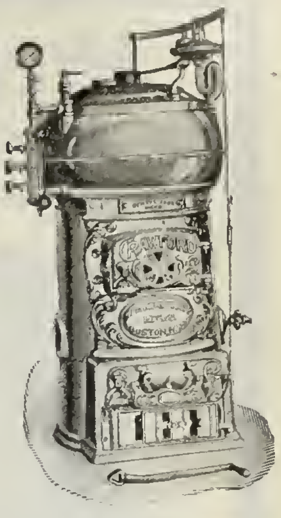
In ordering mention diameter of rings and name of stove.



THE S. M. HOWES CO., 40, 42, 44, 46 Union Street, Boston, Mass.

CRAWFORD BOILER

for Steam: for Water



Our new line of Crawford Boilers are now ready, in three sizes, Steam or Water; they embody new features. These boilers are what you have been looking for. A steam fitter's construction, perfect in every detail. Deep fire pot, attractive design, and superior castings. We want you to know all about them. Send for descriptive circular giving full information. Correspondence and inspection invited.

WALKER & PRATT MFG. CO.

31-35 Union Street, -- BOSTON, MASS.

FURNACES

EXCELSIOR HEATING SPECIALTIES

PIPE

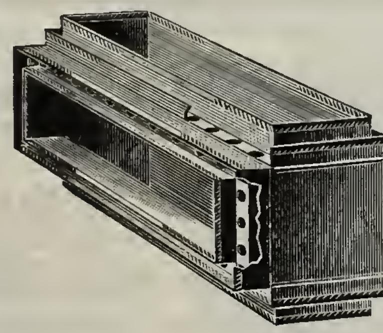
WE ARE MAKING

Very Low Prices

on our full line for present and future deliveries and solicit

Your Inquiries

Our Stove Pipe and Elbows, also Furnace Pipe are the Best made.



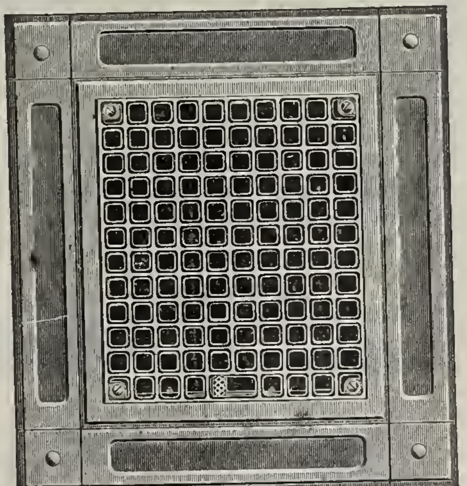
THE EXCELSIOR PARLOR ELBOW.

ELBOWS

EXCELSIOR STEEL FURNACE CO.
38-40 W. MONROE ST.-CHICAGO.

REGISTERS

H. & C. WROUGHT STEEL REGISTERS



FURNISHED WITH WROUGHT STEEL or WROUGHT BRASS FACE PLATES, AND IN ALL FINISHES.

STRONG; LIGHT, HANDSOME in SIMPLICITY of DESIGN.

GENERAL SALES AGENTS
STANLEY WORKS
New Britain, Connecticut.

THE HART & COOLEY CO., New Britain, Conn. 79 Chambers St., New York. 19 Lake St., Chicago.

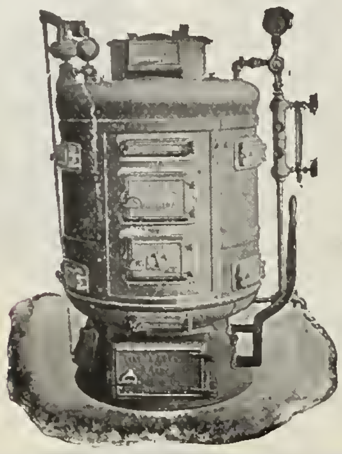
REFRIGERATORS,
BLUE FLAME OIL STOVES,
GASOLINE STOVES.

LARGEST JOBBERS
in
NEW ENGLAND.

GAS RANGES,
FURNACES, STOVES,
RANGES AND REPAIRS.

HENRY N. CLARK CO., 56 and 58 UNION ST., **Boston, Mass.**

Pierce
BOILERS and RADIATORS
for Steam and Water Heating.



Pierce Improved Florida Steam Boiler.
LARGE HEATING CAPACITY.
ECONOMIC IN FUEL CONSUMPTION.
Endorsed by the foremost Architects and Heating Engineers.
Write for New Illustrated Catalogue.
Pierce, Butler & Pierce Mfg. Co.,
Syracuse, N. Y.
New York. Boston. Philadelphia.

The Champion Hot Water Combination Heaters.
They Fit Any Furnace.

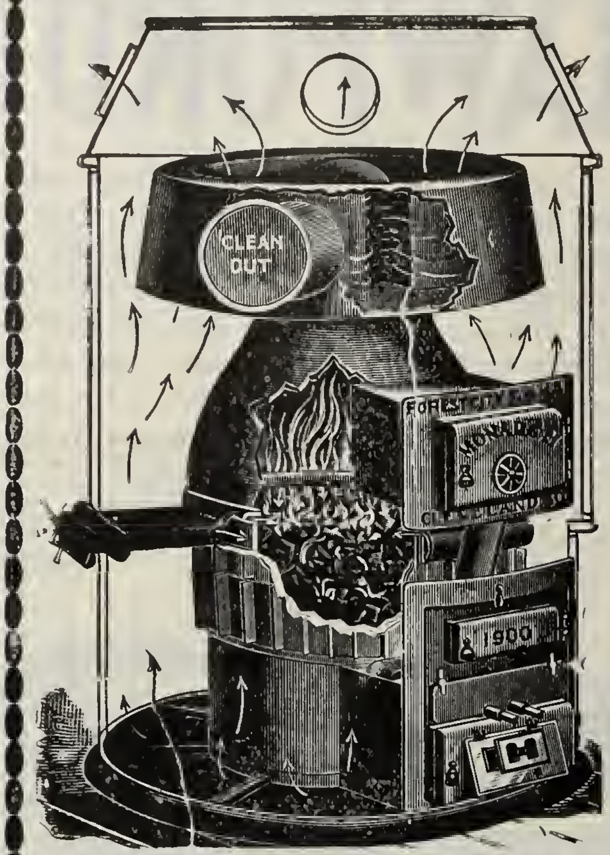
Base section when used without ring sections

Ring Section.

These Heaters are made in five sizes diameter, and from 100 to 700 square feet radiation capacity.
Will heat those cold rooms or an addition to the building. Will increase the capacity of any furnace. Are cheaper than coils and will do more work.
Write for new circular. Manufactured by
FRANK D. STOLZ,
115 Lake St., Chicago, Ill.

"A B C"
Volume Blowers and Exhausters.
Incorporate every modern feature of perfection and efficiency.
Send for detailed Information.

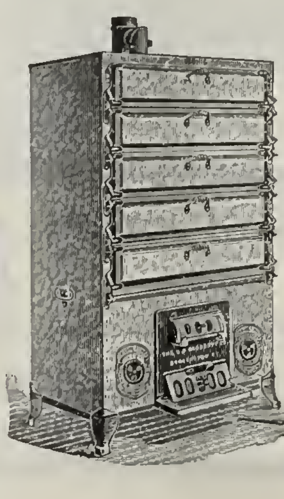
AMERICAN BLOWER CO.
DETROIT, MICH.
NEW YORK. CHICAGO. LONDON.



Monarch Air Blast Furnaces.
All Cast Iron.
For Hard and Soft Coal.
Send for 1902 Catalog and discounts.
The Forest City Foundry and Mfg. Co.
81 Elm Steeet,
CLEVELAND, OHIO.
Gray Iron Castings to order. High grade only.

Brien Heater.
A perfect, all cast WOOD or COAL burner. There is no other Hot Air Furnace as low down as the "BRIEN."
Write for territory, catalog and prices.
BRIEN HEATER CO.,
HOOSICK FALLS, N. Y.

YOU'LL never run up against the heating proposition that you can't meet successfully with the Household Furnace. It's built to furnish Healthy Heat and plenty of it at the least expense for fuel.
This is the Furnace you ought to sell.
White, Warner Co.
TAUNTON
MASS.
HOUSEHOLD FURNACE



Portable OVENS
FOR
CORE BAKING,
JAPANNING,
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OVENS FOR Bakers, Confectioners, Hotels, Etc.
Made in all sizes, single and double, for coal, wood, natural or artificial gas.
SEND FOR CATALOGUE.
The G. S. BLODGETT CO., Burlington, Vt., U. S. A.

STAMFORD FOUNDRY COMPANY

MAKERS OF

RANGES COOKING AND HEATING STOVES
HOT-AIR AND COMBINATION AIR AND
WATER FURNACES
LAUNDRY STOVES CONFECTIONERS' STOVES
CABOOSE RANGES ETC ETC

STAMFORD CONN

Registers are Very Low in Price Now.

You can make no mistake in placing your stock orders NOW. :: :: ::

It is not too early for a bargain. :: :: :: :: ::

INDEPENDENT REGISTER CO.,
152 Champlain St., CLEVELAND, O.

BOSTON GAS COOKER.

Low Priced, But Not Cheap.

OVEN 12 x 17 x 12 INSIDE.

One Extra Large Top Burner. Flush Top, A Perfect Baker.

RETAILS FOR $6

and gives the dealer an extra large profit.

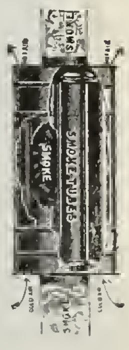
SEND FOR PRICE.

MANUFACTURED BY

THE S. M. HOWES CO., 40, 42, 44 and 46 Union St., BOSTON, MASS.

Common Sense Circulator and Radiator.

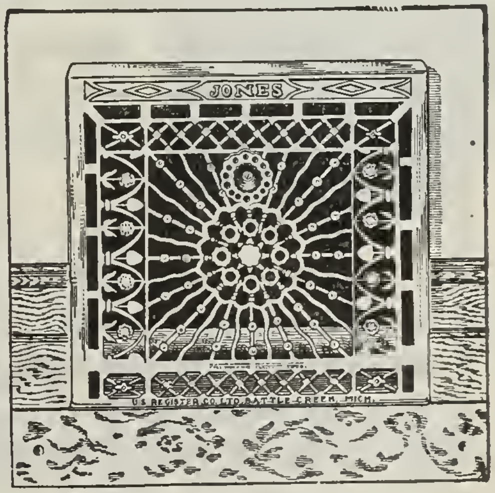
(Patent applied for.)



This Heater is so simple that its superiority over all others is plain. Being open at each end the cold air is taken in at the bottom, passing out at the top heated; producing a circulation unequaled by any radiator. Is easily cleaned or repaired. Takes the place of a joint of pipe. Diameter of casings, 10½ and 12½ inches. Send for prices.

A. C. SELLECK,
755-757 W. Madison St., CHICAGO, ILL.

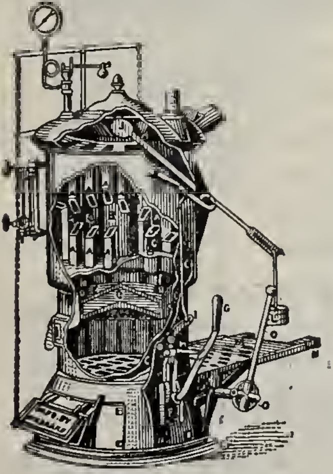
THE JONES Side Wall REGISTER.



THE FURNACEMAN'S CHOICE.

The one *with a Double Ventilated Register Box.* The JONES has 50% *more air* space than others. Catalogue, prices, etc., on application. Manufactured by THE UNITED STATES REGISTER CO., LTD., 61-63 E. State St., Battle Creek, Mich.

Sectional View of the
—TORRID—
Fine Coal Burner



For Steam or Hot Water Heating.

This boiler is made on an entirely new principle and is

The Only Boiler

that will burn Pea or Buckwheat Coal successfully.

SAVES TIME. SAVES MONEY.
RESULTS UNEQUALED.

Send for Descriptive Cuts.

MANUFACTURED BY

W. H. DRAKE, 36 Clinton St., NEWARK, N.J.
Factory: Hackettstown, N. J.

THE GEM Stove Pipe Thimble.

Kramer Bros.
DAYTON, O.

HANDLE THE BEST.

CHAMPION STOVE CLAY

Is the only brand made of crucible materials, viz.: Imported German Fire Clay and Plumbago from Ceylon.

Dealers are invited to send for circulars.

Packed in neat, attractive, round pasteboard boxes of three sizes: large, medium and small, holding about 10 lbs., 6 lbs. and 2½ lbs., respectively.

ALSO SOLD IN BULK.

Your jobber can furnish the goods.

BRIDGEPORT CRUCIBLE CO.
Bridgeport, Conn.

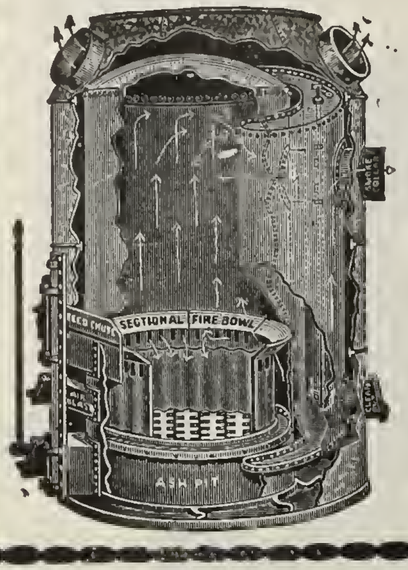
MICA

Specially Prepared for the Stove Trade.
OHIO MICA CO., CANTON, OHIO.

FOR **MICA**

Sheet, cut or uncut, Powdered and Flake,
WRITE TO
ASHEVILLE MICA CO.,
ASHEVILLE, N. C.

The Torrid Zone Furnace



is a trade winner because it has points of merit peculiar to itself that can be found in no other steel furnace. Our new catalogue is now ready to mail and a description of our Hot Air and Hot Water Combination Furnace can be seen in it. We furnish either the cast iron lining or the fire brick at the same price. Our Wood Furnace is called a powerful heater by those who use it.

CATALOGUE FREE.

Lennox Manufacturing Company,
Eighth Ave. and Frederick St.,
MARSHALLTOWN, IOWA.

Champion and Marquart

Double Flue Ranges.

Only Double Flue Ranges in the Market. The Greatest Fuel Saver. Draw-Out Grate.

Handsomely Finished Throughout. Prices Within Reach of all.

CHAMPION STEEL RANGE CO.,
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We are represented by the following houses:

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MONCRIEF FURNACES

PORTABLE and BRICK SET.

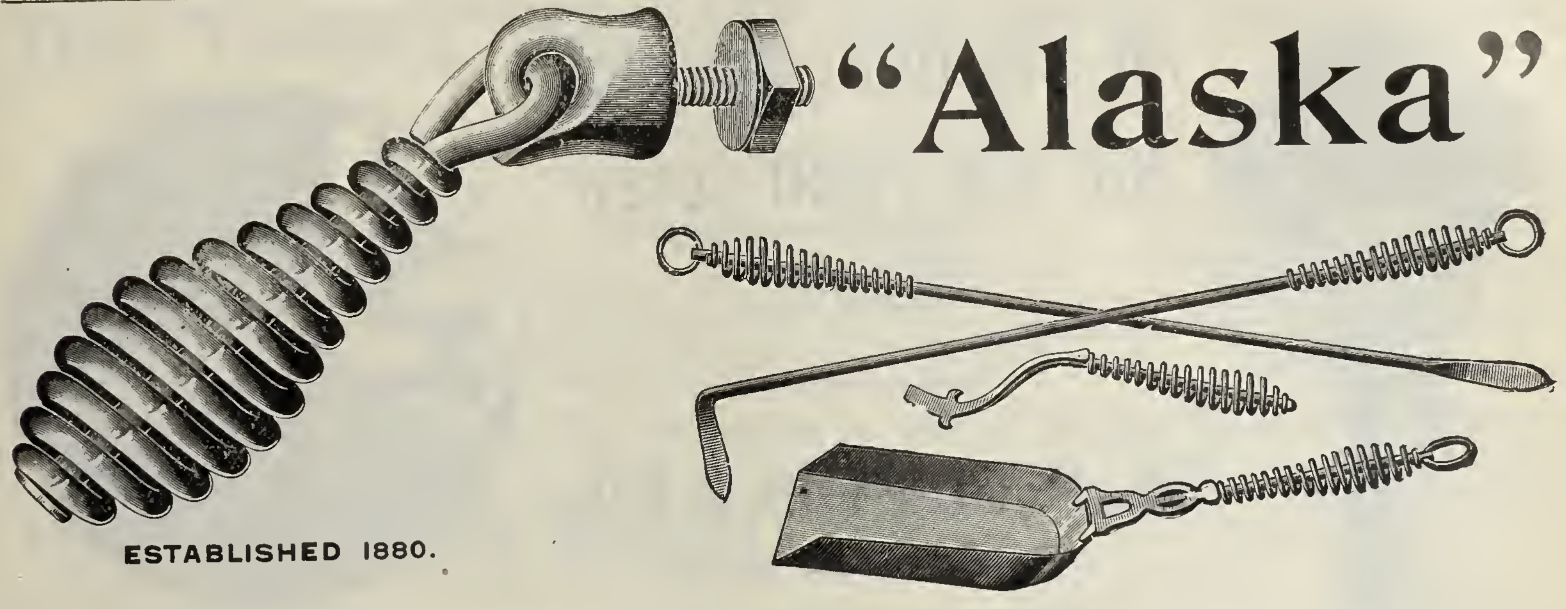
Unequalled in the Great Essentials---Simplicity, Durability, Economy, Capacity, Comfort.

NO BETTER MADE.

Write for catalogue. Special price to the trade

MANUFACTURED BY

The MONCRIEF FURNACE & FOUNDRY COMPANY, ATLANTA, GA.



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ESTABLISHED 1880.

Troy Nickel Works,

ALBANY, NEW YORK.

All The Latest Novelties in Stove Trimmings.

ALWAYS COLD.

Timely Hints

of a helpful sort should put every merchant on his guard in selecting his Plastic Lining for the fall trade. The wise merchant will select the kind that is advertised most and that he knows to be of good quality. Write for prices.

RUTLAND FIRE CLAY CO.,

60 Wabash Ave.,
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"O. H." ONE PIECE STOVE PIPE Elbows

Perfectly round and true to size. With long ends, DOUBLE LOCK SEAM in throat or under side of Elbow.

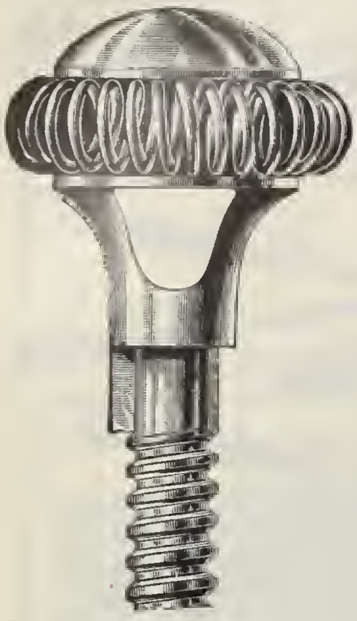
Handsomest, Heaviest and Strongest Stove Pipe Elbow Manufactured.

—SOLE MANUFACTURERS—

THE LAWRENCE-LETTS ELBOW CO., Ltd., - - Waverly, N. Y.

BRAND STOVE CO.

STOVES, RANGES and
FURNACES.
SEND FOR CATALOG.
MILWAUKEE, WIS.



No. 346 Draft Register.

No. 520 ZERO Screw Knob.

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W. H. SHIELDS & CO.,

Successors to W. F. GREENE.

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Fire Brick Linings

—FOR—

Stoves, Ranges, Furnaces.

Eagle Stove Clay.

Incandescent Gas Fuel.

CUPOLA LININGS

For Iron and Brass Foundries.

WILLIAMS STOVE LINING CO.,
TAUNTON, MASS.

DO you want Stoves and Heaters that are easily sold and *STAY SOLD?* We have been very successful in designing patterns for such.

THE GOBEILLE PATTERN CO.,
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ALWAYS IN STOCK.

ALL SIZES OF

Galvanized range boilers, expansion tanks and boilers with copper tube coils inside for heating water by steam.

L. O. KOVEN & BROTHER.
Office 50 Cliff St., New York City.

—"NEXT."—"Yes," said the funny barber, "we're up to date here. We shave you while you wait."

"Indeed" replied Pepprey, "I've usually found that you shave several other fellows while I wait."—*Philadelphia Press.*

MARCY STOVE REPAIR CO.,

MANUFACTURERS OF

RANGE, STOVE AND HEATER REPAIRS

AND FIRE-BRICK LININGS,

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FIRE-BRICK FACTORY,
36 to 46 South Fourth Street, Brooklyn, L. I.

BRANCH STORES:
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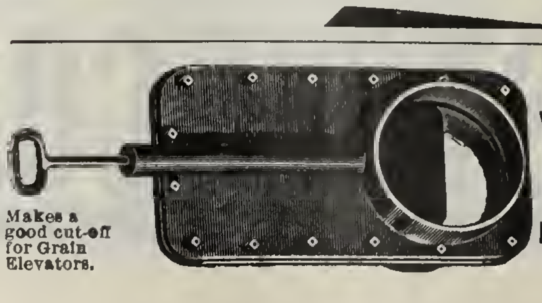
WATER FRONTS.

Try us, we have the Stock.

Our price is right. *Write for Catalogue.*

H. E. HESSLER CO.,
SYRACUSE, N. Y.



Makes a good cut-off for Grain Elevators.

IMPROVED

WIND-GATE

SEND FOR PRICE-LIST AND DISCOUNT TO

MINER & PECK MFG. CO.
NEW HAVEN, CONN.

The YANKEE Hot Air DAMPER (IMPROVED.)

HOT AIR.

THE YANKEE EXCELS.

Above All—Cheapness—a dealer cannot possibly make dampers as cheaply as we sell tne Yankee. Easily put in and taken out of pipes. Stiffest, quickest-working and neatest damper on the market.

It is impossible for this rod when in position to move either way

ROD POINTS: Has wood enameled handle. Wood handle cannot come off. Washer and spring cannot fall off the rod. Same size of holes are punched on each side of pipe. Rod is made of ¼ in. cold-rolled steel and slips into damper very smoothly. **Sample sent to any Dealer without charge.**

MOKE PIPE.

The S. M. HOWES CO., Manufacturers, 40-46 Union St., Boston, Mass.

The Hubbell Tapping Machine

Three Sizes. Capacities, ¼, ⅜ and ¾ in. holes.

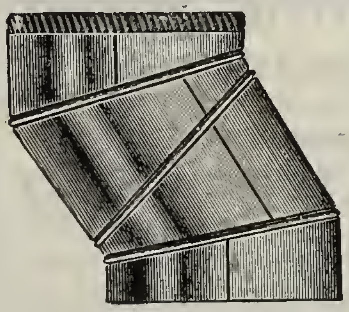
Agents: MANNING, MAXWELL & MOORE, New York and Chicago.

30,000 Holes Tapped in Ten Hours on this Machine.

Manufactured by **HARVEY HUBBELL,** BRIDGEPORT, CONN.
New York Office, 93 Nassau Street.
Telephone, 4213 Cortlandt.
Address all correspondence to Bridgeport.

Chicago Furnace Supply Co.

64-66 West Monroe St.,
CHICAGO, ILL.



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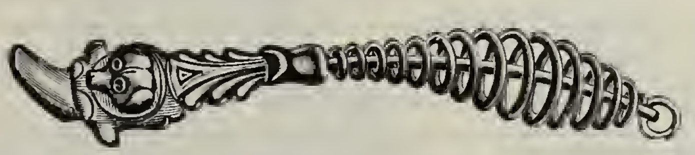
MANUFACTURERS of ROUND FURNACE PIPE, ADJUSTABLE ELBOWS, WALL PIPE, REGISTERS, FITTINGS and SUPPLIES.

Stove Pokers and Lifters.



"Siberian Lifter."
Fancy design, nickel plated body malleable iron.

"SIBERIAN" POKER.
Either bent or straight ends; length, 20 in.

Manufacturers of HARDWARE SPECIALTIES.

WRITE US FOR PRICES.

ARCADE MANUFACTURING CO., - FREEPORT, ILL.

A TIP TOP TIP

STANDARD BURNER

OUR OWN FACTORY

"HAHN"

ACETYLENE GAS BURNER

J.B. CARROLL
38-LASALLE ST.
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CORRECT PRINCIPLES

PERFECT COMBUSTION

Stove Dealers

will make money and save money by using

Dixon's Graphite Cement.

There is nothing equal to it for repairing fire brick in stoves, furnaces, etc. Let us send you sample and prices.

JOSEPH DIXON CRUCIBLE CO., - JERSEY CITY, N. J.

PATTERNS

FOR STOVES AND HEATERS.

First-class in wood and iron.

Vedder Pattern Works. - Troy, N. Y.

The Milwaukee Pattern Works.

Ornamental and Stove Patterns.

Sketches and Designs for Stove Work of all kinds.

Correspondence Solicited.

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EUGENE MUNSELL & CO.
MINERS & IMPORTERS.
NEW YORK 218 WATER ST.
CHICAGO 117 & 119 LA[illegible]

THE GEORGE W. COPE
Stove Pattern Works.

ORIGINAL, ARTISTIC AND PRACTICAL CONSTRUCTION.

Cor. Randolph and Atwater Sts.,
DETROIT, - - MICH.

SHINES FOR ALL

It is the polishers' friend, and will polish anything.
Write for free sample to

297 E. Washington St.,
Ind'p'l's, Ind.

GEO. W. HOFFMAN.

— A lady was looking for her husband and inquired anxiously of a housemaid: "Do you happen to know anything of your master's whereabouts?"

"I'm not sure, mum," replied the careful domestic, "but I think they're in the wash."—*Pathfinder.*

— LOOKED IT.—Clerk: "Well, I'm tired. I've been workin' for all I'm worth to-day. Don't I look it?"

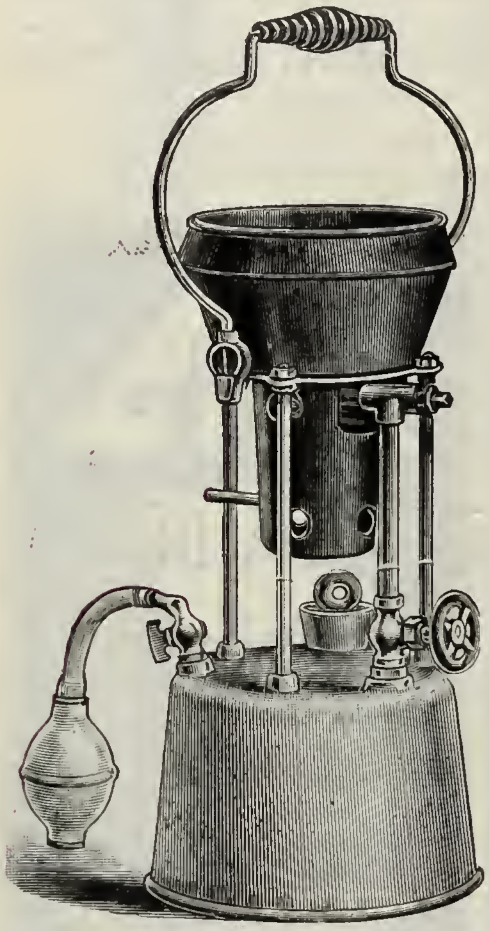
Employer: "Well, yes, you certainly do look like 30 cents."—*Philadelphia Press.*

L. WOLFF MANUFACTURING COMPANY,

General Office,
93 W. Lake Street, CHICAGO.

WOLFF'S IMPROVED PLUMBERS' FURNACE.

The "DURO."



THE "DURO" "F" 1241.
PRICES UPON APPLICATION.

Quantity shipments are packed in cases 6 and 12 furnaces each.

The "DURO" Plumbers' Furnace

Has Drawn Steel Reservoir
Heavily Galvanized.

Drawn Steel Coil Cup.
Wrought Steel Bottom.
Patent Wire Handle.
Improved Filling Plug.
Safety Air Cock Joints.
No Cast-Iron Parts

It weighs less than any other Furnace now in use.

In placing on the market

Our Improved Plumbers' Furnace

we have fully succeeded in producing *the best furnace made.* Most perfect in every detail. Of the highest efficiency. In operation, positive and reliable. Of substantial construction; combining lightness, strength and durability, at no more cost to the trade than the old style.

All component parts are interchangeable, being accurately made and fitted before shipment.

Illustrated Catalogue and Price-List sent upon application.

LEATHER and RUBBER WASHERS,

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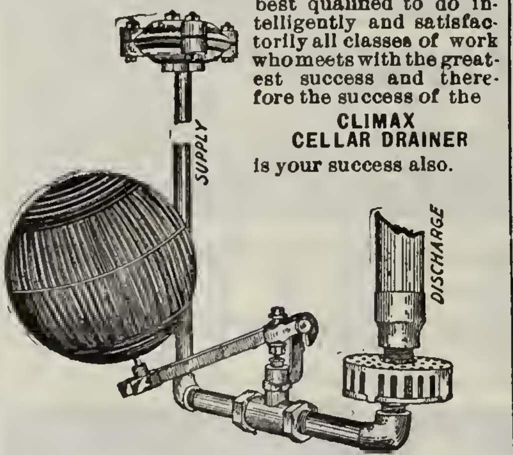

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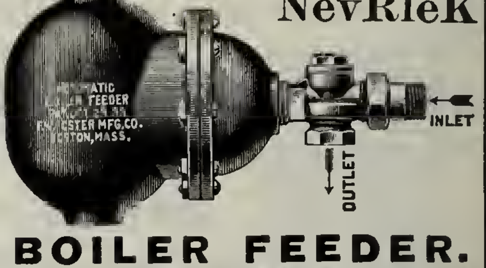

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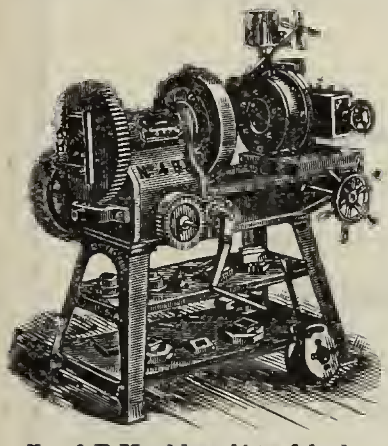

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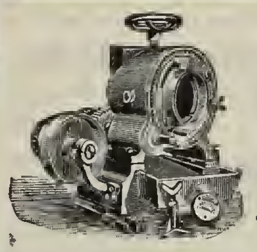

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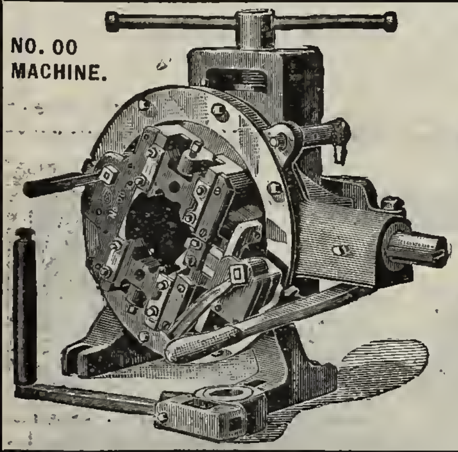

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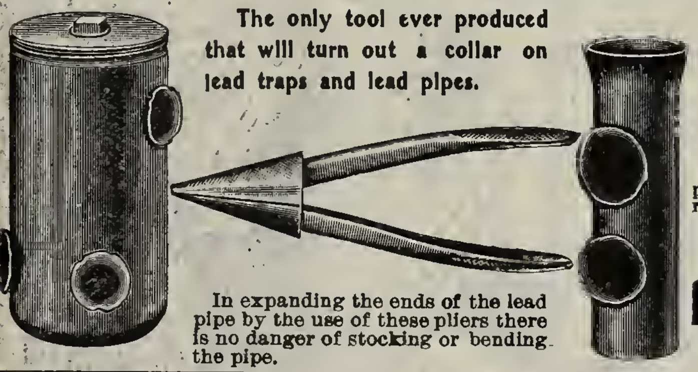

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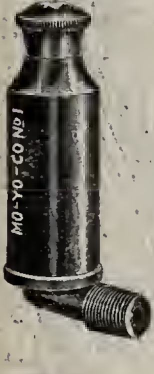

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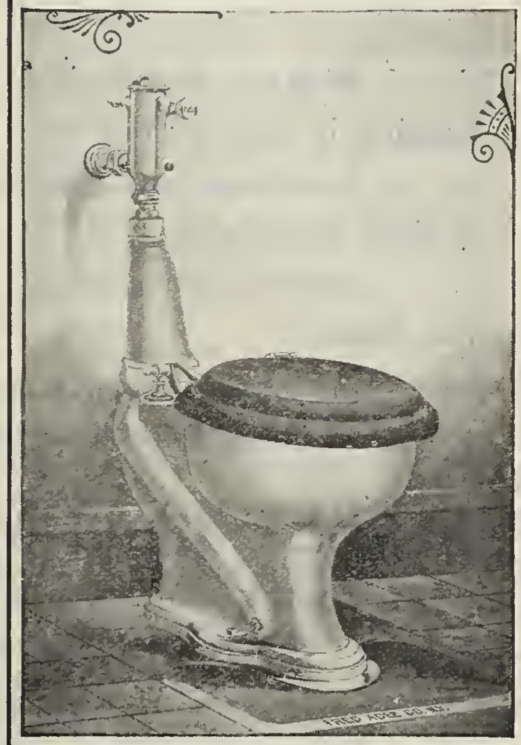

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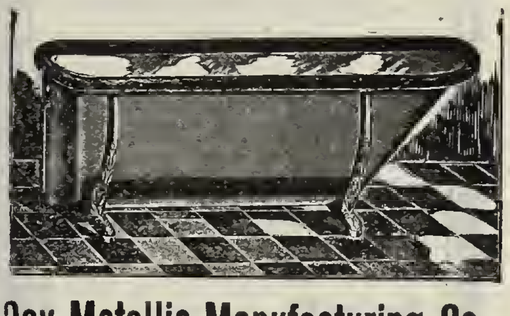

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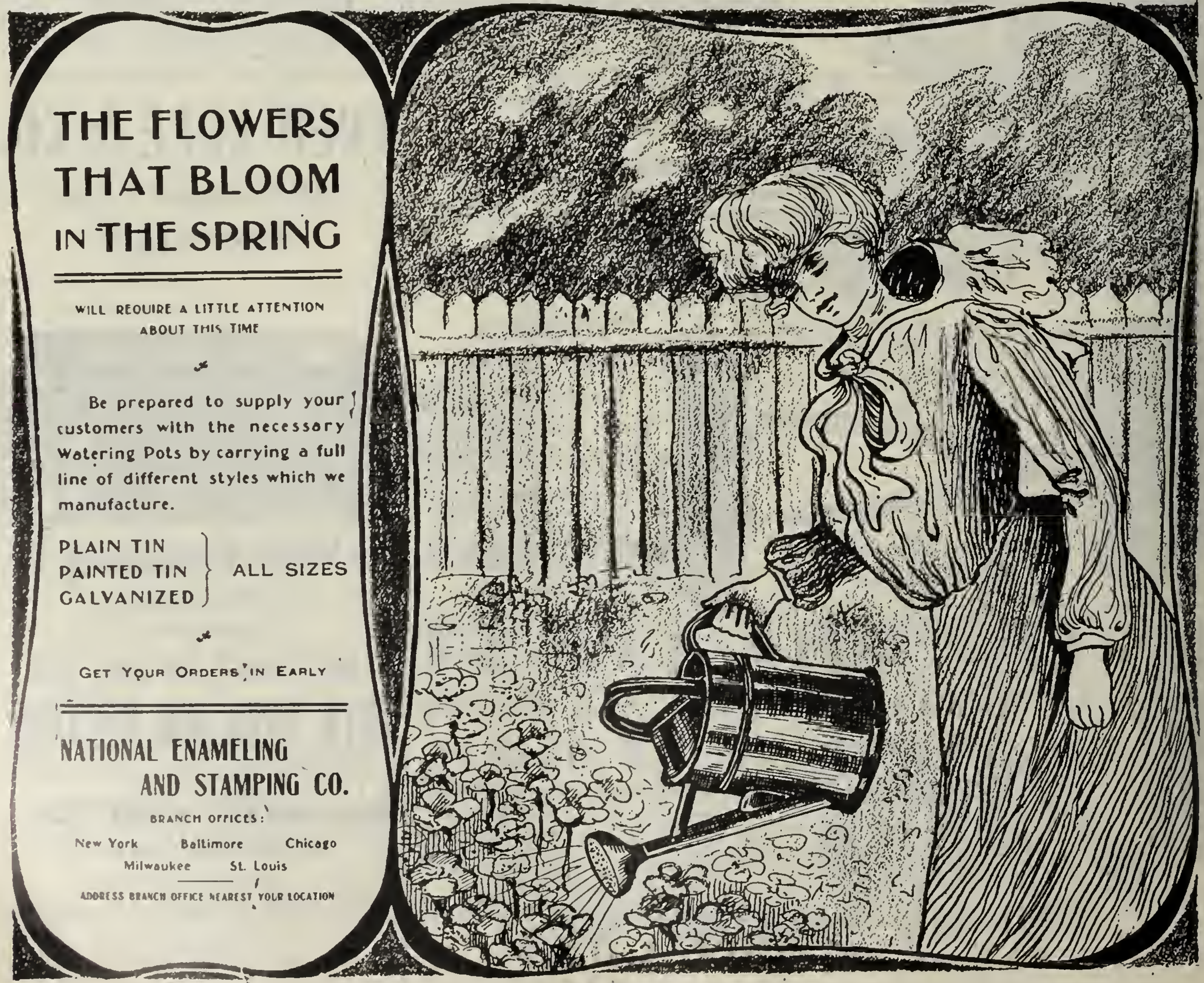

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NEW YORK AND CHICAGO.

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Effects of the Coal Strike.

The coal strike has entered upon its seventh week, with little indication of an early settlement. While all strikes are, of course, detrimental to the general welfare, those of the coal miners are particularly injurious, as they affect the interests of so large a part of the population of this country throughout many States. We find at this time the strike of the anthracite coal miners interfering seriously not only with manufacturing industries in the eastern section of the country, but also with the comfort and convenience of the people at large. They are suffering from annoyances caused by the scarcity of anthracite coal, which are far greater than had been anticipated. The interference with manufactures has not been so great as it might have been, inasmuch as bituminous coal has been substituted as far as possible for anthracite and thus the works have been kept in operation, but the increased price of fuel naturally tends to reduce the profits of manufacturers. The scarcity of anthracite has caused several blast furnaces to be banked or blown out, and this brings considerable inconvenience to a section of the iron trade at a time when such a heavy demand for iron exists that any restriction of the supply is immediately felt. We are now, however, confronted with the possibility of a diminution in the supply of bituminous coal, caused by the extension of the miners' strike to the soft coal regions. This may prove a most serious matter, as both manufacturing and transportation interests may be greatly affected. It is to be hoped that the strike of the soft coal miners is not so extensive as indicated in some of the reports and that it will not spread to the more important mining districts of Western Pennsylvania.

Causes of Strikes.

The number and importance of the labor troubles now in progress prove most impressively the futility of all efforts by economical organizations or philanthropic individuals to bring about better relations between employers and workingmen. It seems inevitable that a conflict of interests resulting in a strike must develop at some time. In periods of depression strikes are caused by reductions in wages or by the enforcement of regulations designed to increase output or lower the cost of production. But in times like these they are caused by the aggressions of labor organizations, either seeking a greater share of the presumptive large profits or aiming at a reduction in the service to be rendered for the wages paid. But whatever may be the cause, no effective means has yet presented itself for a speedy settlement. Employers brook no outside interference, as they very properly claim that those not directly interested are not sufficiently qualified to judge fairly the merits of the issue involved. Workingmen, on the other hand, usually express themselves in favor of arbitration, as they know that arbitration in the great majority of cases means a compromise, thus giving them some advantage from which they can hope to attain further gains in the future. A most deplorable development of modern strikes in great industries is the complete breakdown of civil authority whenever employers attempt to continue their operations in defiance of their striking workmen. Few cities or communities can be found in this country in which the ordinary authorities are strong enough to protect life or to insure the liberty of an individual when a strike is in progress. Yet, in the words of Kipling, it seems that we must simply "muddle" along, hoping that something will happen to bring about a better state of affairs.

Steam Fitters and Boiler Manufacturers at Atlantic City.

The annual convention of the National Association of Master Steam and Hot Water Fitters at Atlantic City last week furnished this body with another able set of officers, and while its most important business was transacted in executive session, it was the general impression at the close of the deliberations that the convention had been productive of decided benefit to the members. The Committee on Grievances found occasion to meet, and some who were held to have offended by their methods of trading came before the committee, with the result that the points raised were fully explained. While the place for holding the next convention was left to the Executive Committee, a strong effort will undoubtedly be made to secure favorable action on the invitation from the railroad companies and other interests to hold the next convention in California. The convention was made the opportunity for the exhibition of many new and standard goods, and not a few good orders are reported as a result of the meeting. The boiler manufacturers, who held their meeting in Atlantic City at the same time, secured a good attendance. Many interesting matters were discussed by this body, but the most important action taken was to maintain unchanged the prices on boilers and radiators now prevailing. The advisability of printing in catalogues the ratings of boilers was a theme of conversation at the meeting, but any change in the old custom is regarded as improbable.

The Use of Oil as Fuel.

The existing coal strike has served to call the attention of the public to the fuel resources of the United States in the shape of oil. Much testimony has been brought forward recently in support of the claim that oil as fuel is cheaper than coal. The Southern Pacific Railroad Company, according to a dispatch from Beaumont, Texas, have issued a statement showing that during the month of May 39 of their locomotives burning oil for fuel traveled 100,000 miles on 12,000 barrels of fuel oil, at a cost of $3600. The cost of coal for this work is stated approximately at $20,000, indicating a saving to the railroad company by the use of oil fuel of about $16,000. A press dispatch from Baltimore this week reports that a number of leading manufacturers in that city are now using oil in place of coal to furnish heat for the boilers at their plants. These manufacturers allege that they find the oil less expensive than coal, while fully as effective and much cleaner, in that its use does away entirely with the black smoke, soot and dust which have always accompanied the use of coal. Similar testimony comes from other sources where oil has been substituted for coal for manufacturing purposes. Moreover, the exhaustive experiments in this field that are being conducted by the Bureau of Steam Engineering of the United States Navy are said to have brought out, in the most striking manner, the advantages of oil as a fuel in comparison with coal. In experiments with oil fuel which were conducted last week under the eye of Rear Admiral Melville, under a force draft pressure of 1 inch one-third more steam was produced than under corresponding conditions when the best quality of Pocahontas coal was used as fuel. Furthermore, the experiments are said to show that the combustion of oil fuel can be made so complete as to produce practically no smoke. This seems to offer a solution of both the smoke problem and the coal problem. Naturally, it will be a long time before oil would come into general use as fuel, because the change from coal involves costly changes in apparatus. At the same time, it is satisfactory to know that this country possesses a practically unlimited supply of an efficient substitute for coal. Should the present coal strike be greatly prolonged, there is no doubt that the use of oil as fuel will receive a great stimulus in this country.

Quantity versus Quality.

One of the secrets of American industrial success is the extraordinary ingenuity and skill in turning out great quantities of goods at a minimum of cost. To this end the genius of her inventors contributes, while for its attainment the investment of capital is on a liberal scale unthought of until recent years. In almost every branch of the metal trades it is necessary for the manufacturer, in order to score a commercial success, to give his attention to the production of goods in large quantities and by the most economical processes. In many lines the competition is so close and the margins of profits have been so narrowed that it is only by doing a heavy volume of business that he can obtain anything like an adequate return for his investment of capital and labor. This tendency toward the production of articles at the lowest possible cost is fostered also by the popular demand for goods at the lowest obtainable prices. In a great many lines it has for years been necessary to put on the market goods which sell at a very low price, too low a price, indeed, to be consistent with fair quality. Hence, manufacturers have often been driven to producing goods of low quality which serve a temporary purpose, but are in the long run quite unsatisfactory and more expensive to the user than if costing considerably more as of better material and workmanship. Under the stress of business exigencies some manufacturers doubtless find it their policy to turn out such goods in great quantities, making the matter of quality an entirely secondary consideration. Such manufacturers are to be regarded as filling a necessary place in the commercial organism, but their position is not nearly as desirable nor their business interests as well secured as if they were among the fortunate number who are permitted to make the quality of their products a leading consideration and carry on a profitable business in goods which are regarded as setting the standard of excellence for the trade.

Editorial Notes.

Plumbers' strikes in many parts of the country continue to be a disturbing feature which is seriously affecting the building industry and the various trades catering thereto. There has seldom been a time when so many strikes of this character were in operation as at the present. Many of these labor disputes have been carried along for several weeks with little indication of an early settlement. Some of the strikes have been adjusted in the past week or two, however, mainly by concessions granted by both sides. The effect of these labor troubles is very apparent in the demand for plumbing goods in the East. Jobbing houses report a decided falling off in the demand for this class of material, which they attribute almost wholly to the suspension of construction operations on account of strikes. Considering the high prices at which almost all plumbing materials are now selling, the demand for higher wages by the workmen, which will materially increase the cost of labor, will tend to so further enhance the cost of plumbing as to discourage projected building operations in some quarters.

One result of the anthracite coal strike which brings that unfortunate occurrence home very forcibly to the citizens of New York is the contamination of the usually pure air of the city by the smoke and soot of the soft coal which is being very generally used by large consumers. The atmosphere in New York City these days is becoming more like that of Pittsburgh or Chicago. The matter of the soft coal nuisance has been taken up by the city Board of Health with a view to its suppression; but so long as the anthracite coal strike continues and supplies of that kind of fuel are unobtainable it is difficult to see just what can be done to remedy the present trouble, unless it be by the more general use of smoke consuming devices, some types of which have proved efficient in other large soft coal burning centers. It would seem that New York will have to patiently bear the annoyance for a while, until the settlement of the present strike again permits an adequate supply of anthracite coal to be secured.

The American School of Correspondence.

Believing that the work of education in technical subjects by means of correspondence may be made efficient and helpful beyond what has hitherto been accomplished, the professors and instructors in engineering and the faculty of the Armour Institute of Technology, Chicago, will hereafter constitute the Board of Instruction, Revision and Examination for the American School of Correspondence of Boston, Mass. The aim of the management of the school is to make the work of correspondence co-ordinate with the work of the shops and laboratories. Therefore the work done at the School of Correspondence will be fully accepted and credited at the Armour Institute of Technology when students desire to complete their course by actual residence in Chicago. The instruction papers and methods of the American School of Correspondence have been examined by the members of the faculty of the Armour Institute and have been approved. Dr. Frank Gunsaulus, president of the Armour Institute, has become chairman of the Advisory Board of the school, and the faculty above mentioned will co-operate with him to conduct this educational enterprise by correspondence in the hope that earnest and aspiring students of all ages may be enabled to obtain the results of the latest and most complete laboratory work and experimentation in the Armour Institute of Technology. Full credit will be given there for work done according to this arrangement with the American School of Correspondence.

The American Society of Heating and Ventilating Engineers.

FIFTH SEMIANNUAL MEETING.

The fifth semiannual meeting was one of the most enjoyable and interesting that the American Society of Heating and Ventilating Engineers has ever held, although a previous semiannual meeting of the society was held in Atlantic City. The meeting was called to order at 10.45 a.m. on Monday, June 16, by President Alfred E. Kenrick, who announced that all interested in the exchange of experience on heating and ventilation were accorded the privilege of the floor. The secretary then called the roll, and the following members were found to be present during the meeting:

List of Members.

B. Harold Carpenter,
George C. Blackmore,
J. J. Blackmore,
P. H. Kendricken,
H. L. Hall,
Stewart A. Jellett,
W. M. Mackay,
H. Addams,
T. G. Haywood,
John Gormly,
P. Gormly,
J. H. Davis,
Warren Webster,
Theodore Webster,
C. P. Vanderveer,
Andrew Harvey,
W. Kent,
Frank K. Chew,
A. E. Kenrick,
W. F. Wolfe,
A. N. Chambers,
Enoch Rutzler,
James Curran,
C. B. J. Snyder,
John J. Harris,
H. B. Gombers,
C. E. Oldacre,
J. A. Payne,
J. R. Shanklin,
Fred. D. Johnson,
A. S. Mappett,
A. B. Franklin,
A. P. Broomell,
John C. F. Trachsel,
Harry S. Martin,
J. J. Wilson,
H. Sullivan Alexander, Paris, France.
J. A. Crowley,
F. P. Edson,
D. M. Quay,
W. H. Switzer.

The meeting was also attended by a large number of guests from the other associations.

New Members.

The secretary then announced the election of the following new members:

Albert B. Franklin, Boston.
Frank Dobson, New York.
Wm. Cressy Vrooman, Schenectady, N. Y.
A. P. Broomell, York, Pa.
George M. Langdon, Hartford, Conn.
Clarence M. Lyman, Utica.
John C. F. Trachsel, Philadelphia.
C. E. Oldacre, Philadelphia.
John H. Lindsay, Brooklyn, N. Y.
Charles P. Vanderveer, New York.
Frank Paley Edson, Topeka, Kan.
Walter Yates Swinton, Manchester, England.
F. M. Mechling, Pittsburgh.

Associate Members.

Harry S. Martin, Dunkirk, N. Y.
Alfred E. Pfahler, New York.
John N. Bruce, New York.
T. Guy Haywood, Norwich, Conn.
Chauncey L. Williams, Chicago.
John A. Crowley, Chicago.
George A. Robertson, Brooklyn.

Discussion on Mr. Gormly's Paper.

The paper, entitled "A Time Limit and Dry Walls Necessary in Testing a Heating Plant," by John Gormly, presented in another column, was then read and discussed as follows:

Wiltsie F. Wolfe: Was the air changed during the test?

John Gormly: The building was open by reason of its incomplete condition, though the windows were covered with muslin.

C. B. J. Suyder: We have a number of fire proof buildings to test in New York this fall, and have prepared a form to include the various facts to be recorded.

W. Kent: The coal burned on different days of a test, cold or mild, should be recorded, as often the coal burning capacity necessary for success is impaired by inadequate chimney capacity.

A. P. Broomell: One of the difficulties experienced in making a test is to get the heating plant correctly attended to so as to carry an even pressure. With steam from street mains, where the steam can always be had, much less radiation will be required than where a boiler is used and left to the care of unskilled servants.

M. Sardou: One of the troubles is the duration of the tests. In my opinion, they should last for several days.

W. F. Wolfe: Air at 59 degrees will carry one-eightieth of its weight in water, and every 27 degrees increase in the temperature will double its moisture absorbing power.

M. Sardou: One of the difficulties in heating a building having wet plaster on the walls is due to the immense amount of water in the walls, which absorbs the heat faster than it is generated, and to the extent that it is impossible to raise a pressure on the boiler.

John C. F. Trachsel: The failure to raise pressure is due to the work having to be done over and over again. The water is evaporated and deposited on the glaass in the form of ice and the process is continually repeated.

M. Sardou: The time of test should be extended. I consider the time limit of 144 hours for test for fan systems in Baltimore schools too short.

H. Addams: I consider that cold walls have more influence than wet walls.

W. Kent: There is a great difference in the capacity required to heat a cold building to a given temperature and the capacity required to maintain that temperature after it has been reached.

W. F. Wolfe: The paper will be valuable for the information of customers who may demand a test under certainly difficult conditions.

Tenth Anniversary Meeting Discussed.

The topic, "The Tenth Anniversary Meeting in 1904: Suggestions for Making it a Notable Occasion," was then taken up. The discussion was opened by Frank K. Chew, chairman of the special committee, who invited suggestions for the assistance of the committee.

Andrew Harvey of the committee suggested that the opportunity for advancing the prestige of the society should not be lost, and W. F. Wolfe explained the interest taken in the society and the high place accorded it in the opinion of foreign engineers.

W. Kent suggested that the summer meeting of 1904 be held in St. Louis, relating the benefit to be derived by an engineering meeting at the World's Fair.

Frank K. Chew then spoke on the subject as follows:

The committee will be glad to receive your suggestions. That of Mr. Harvey is a good one, that one of the papers to be prepared for the 1904 meeting be a history of what the society has done in the past ten years. I have made a note of that, and intend to ask Stewart A. Jellett, than whom no one knows more clearly the objects of this society and what it has accomplished, to prepare such a paper. Some of our members here may not know the extent to which the published proceedings of our society are referred to in the different colleges in which engineering is taught, or the number of libraries where scientific works are gathered, on whose shelves our proceedings are to be found. So that a paper along these lines would surely be an interesting one to present at the meeting in 1904. It has been suggested that these and other papers be prepared in advance, not late like the papers that have come here in galley proofs. They should be received six months in advance, so that they can be sent to the members and digested. Delay in sending out the papers is one of the troubles that this society has always experienced, and which has tended to reduce its membership. I am satisfied that our membership would be much larger and that much more interest would be taken in the meetings if the papers were received in time to be printed and sent to the members before the meetings.

Now, to come to the suggestions that the committee have received: Mr. Seward of New York is the only member of the committee I have had a talk with, although Messrs. Stangland and Barron are in New York also. Mr. Seward says that the opportunity for advertising the society should not be lost. The society has already risen to a place where it ought to be brought to the attention of men who will take a deep interest in its work when they know about it, and the tenth anniversary will afford an excellent opportunity to bring it to the attention of those men. Mr. Seward's idea is—to make it specific—to get up a four-page letter sheet. The first page would have at the top. "The American Society of Heating and Ventilating Engineers." and then, in big type, "Tenth Anniversary Meeting, 1904." and if we decide that it is advisable to have the summer meet-

Summer Meeting of the American Society of Heating and Ventilating Engineers, at Atlantic City, N. J., June 16, 1902.

ing in St. Louis, it would be well to put that on also. This first page is blank for correspondence. Then we turn over to the next page, and with "The American Society of Heating and Ventilating Engineers" at the top, explain its objects, aims and what it has accomplished. Here would be given to a man who knew there was such a society, but who possessed little information as to its scope and character, a good deal of information about the society. Enough room would be left to print the names of the entire membership, and I think some of the lesser lights, like myself, would not be envious if we put down some of the achievements of our more prominent members. This letter head should be sent to every member of the society. Every member knows some man who ought to be a member. We are not so much after the man who is a graduate of some college, or who has done some big work. If he is an ambitious young man of the right sort and character, he will do. We do not want a man who is in the habit of painting the town red. We will wait until he settles down. So that when this stationery is received by the members they will be sufficiently discreet to correspond upon it with the right people. This is Mr. Seward's idea, if I understand it rightly. If the 200 members of our society use stationery of that character it will certainly bring it prominently before a great many men who are not now members, and who will see that it is a society worthy of their support by membership.

My ideas have been on an entirely different line, and there are two of them. The first is suggested by the fact that the Master Steam Fitters' Association has gained very substantial prestige from the circulation of the "Standard Flange Schedule." A few years have elapsed since that was put out, and now the frequent use of high pressure has made the "Standard Flange Schedule" subject to change and improvement. I want to preface one of my ideas with these facts, so that the idea that I want to present will not be subjected to the criticism that we are not setting up any standards because they will not be perfect. We do not care if they are not perfect at the start. We shall be glad to improve. The society can give to an immense number of people a little handbook for this meeting of 1904 saying the Committee on Standards has advised the following suggestions for a two-pipe steam system. The size of the main could be determined for a certain amount of radiation by this formula. Then give a little table. Turn over to hot water and do the same thing; and, as the hot air furnacemen are coming to the front in this society, I think a page should be devoted to hot air furnaces. I think we can depend upon Mr. Oldacre and Mr. Switzer to fill out that page. Now, a small handbook on the society given out at that particular January meeting and then circulated broadcast, notwithstanding that manufacturers put in the back of their catalogues that a 1-inch pipe ought to have a given size of return pipe to be effective, would do a great good, and such a handbook would prove one way of advertising our society.

We ought to have at the 1904 meeting papers on work that has never come up in our society. The ventilation of ships of all sorts is interesting to a limited number of people. Consequently it belongs in the 1904 meeting. Transports have carried no end of soldiers to Manila, and their heating and ventilating systems have not been described. There were special ventilating systems in these transports. I have talked with a member who says he has sold to the Government apparatus of various character, and I gather from his talk that there is something rather unique in the method of heating those transports. The committee will be grateful if he will find some way to prepare a paper along those lines. I want to see special papers of unusual interest presented. I do not care whether the paper is on a fan system, or a vacuum system, or some simpler system, so long as it is of unusual interest.

This is the line on which my mind has run for making that meeting a success, and you can see that there is a lot of work in it for somebody. I have not as much time to give to it as it may need. Consequently, the members of the society must lend their assistance promptly, or possibly the effort will fall flat and we will have a failure, not due to lack of interest on the part of the committee, but to lack of material, which can only be furnished by the members.

The secretary reported that the published proceedings of the society would as a result of a better condition of the treasury be issued to the members up to date, which statement was greeted with applause.

W. H. Switzer: I think one of the greatest attractions of the society is the fact that is on a sound financial basis.

W. M. Mackay: One of the drawbacks to the interest in the society and its meetings is the lateness that the papers prepared by the members reach the secretary for publication.

On motion the meeting then adjourned to meet at 8 o'clock.

EVENING SESSION.

The meeting was called to order at 8.30 p.m. by President Kenrick. The secretary read a telegram from Prof. R. C. Carpenter, stating that it was impossible for him to be present. Letters were read from Professor Hutton acknowledging the receipt of an invitation to the officers of the American Society of Mechanical Engineers and from A. M. Waitt, superintendent of motive power and rolling stock of the New York Central & Hudson River Railroad, regretting his inability to accept the society's invitation.

Discussions.

A paper by John J. Harris on "Cooling an Auditorium by the Use of Ice," presented in another column, was read and discussed. After discussion the secretary was requested to correspond with Mr. Harris and ask for further data to fill out what proved to be a very interesting paper.

Under the head of "Topical Discussion" a number of subjects were brought up. Among them was the disagreeable results that may follow a guarantee to heat to a given temperature at zero weather.

Further suggestions were given in reference to the tenth anniversary meeting, the most important of which was that the members should volunteer to inform the secretary or the committee that they would prepare papers on subjects familiar to them and lend their assistance generally. The committee were requested to prepare a list of subjects and distribute it among the members so that they might reply upon which they would prepare a paper, although papers on any subject with which members have experience would be welcomed.

After discussion the Board of Governors were requested to prepare a petition to be presented to the Advisory Committee on Engineering of the Carnegie Institute, setting forth the importance of establishing at the national capital a laboratory for experimental engineering, to be devoted to the testing of engineering appliances and for original research, and that one branch of such laboratory be devoted to the development of heating, cooling and ventilating.

At the close of the discussions, what was generally considered to be a very interesting meeting was finally adjourned.

"HEAT UNITS."

President Alfred E. Kenrick of the American Society of Heating and Ventilating Engineers has now received the highest honors that can be given by the National Association of Master Steam and Hot Water Fitters in his election as president of that body.

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Henry L. Hall, another member of the society, is the steam fitters' new vice-president.

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John J. Harris' paper on cooling buildings attracted the attention of many of the people visiting Atlantic City.

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The tenth anniversary meeting in 1904 was the topic of conversation among many interested in making it a success. It is regarded as a fine opportunity for lifting the society well beyond any need for petty economies by bringing into its membership those engineers who should lend their assistance to the excellent work it is doing.

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H. Sullivan Alexander of Paris, France, who is a large handler of boilers made in the United States, took great pleasure in meeting so many American heating engineers and listened attentively to the reading of the papers and their discussion.

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A goodly number of applications are now in the hands of the secretary, some for full membership and some for associate membership, the latter being open to those identified with this branch of industry and who desire to give the society their support.

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Twenty new members since the last meeting is good evidence of the impression the society's work is making on the profession.

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John Gormly's paper on the conditions necessary to a fair test of a heating apparatus gave light on a subject that has had the serious consideration of the society for two years.

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Regrets were freely expressed that the exigencies of business compelled ex-President Stewart A. Jellett to forego the pleasure of staying over to attend the meeting.

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Prof. W. Kent came from Pittsburgh, arriving on Saturday evening, to visit the members and to attend the meeting.

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Ex-President Wiltsie F. Wolfe, who is soon to make another trip abroad, nobly aided in making the meeting a success.

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Andrew Harvey brought his family as far as Ithaca, N. Y., where one of his sons graduated as a mechanical engineer this year.

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Lansing Taylor Carpenter is a six-year-old engineer, who came to the meeting with his father, B. H. Arnold Carpenter, but neither the Hotel Rudolf nor the board walk had the attractions for him that the sand and surf possessed.

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The Buffalo Forge Company of Buffalo, N. Y., were represented by J. I. Lyle, M.E., manager of their New York house, and Wesley Bartine, M.E., manager of their Philadelphia house, who contributed not a little to the interest of the meeting by their information about the practical use of fans.

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K. Duff of the Johnson Regulator Company's New York office attended the meeting and explained to many listeners the Johnson system of regulation.

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Mrs. George C. Blackmore, Mrs. Homer Addams, Mrs. W. M. Mackay and Miss Jessie Mackay went on a sailing party accompanied by W. M. Mackay, W. F. Wolfe, Geo. C. Blackmore, J. J. Blackmore, H. A. Smith and Homer Addams.

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Prof. Wm. Kent smashed the punching machine at the Inlet to the tune of 575 pounds. He formerly taught the boys some important lessons and had the force to make an impression on his scholars.

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The engineers and steam fitters were alike impressed by the dip paint for fittings and for painting iron pipe shown by Fred. J. Shaler of the Wisconsin Graphite Company of Pittsburgh, Pa. Many orders were placed for this paint and also for the company's pipe joint cement.

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Clarence S. Stokes, 240 West Somerset street, Philadelphia, represented the Norristown Covering Company of Norristown, Pa., manufacturers of pipe and boiler coverings.

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E. Payson Trumbull, representing L. C. Howell & Co., 2013 Columbia avenue, Philadelphia, was an attentive listener at the meeting.

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At the close of the morning session President Kenrick announced that the members were invited to Parlor G, where the hospitality of Jenkins Bros. of New York was dispensed with a large ladle by C. F. Webber, assisted by W. G. Le Compte and S. Le Compte. Charlie is strong on cordiality, and all were impressed with the good cheer of his greeting.

The Fowler & Wolfe Mfg. Company, Bourse Building, Philadelphia, presented the members with a celluloid vest pocket 1-foot rule graduated in inches and centimeters. On one side is shown one of the company's wall radiators.

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J. J. MacDonald, 901 Maritime Building, New York, representing the Automatic Heating Company, was one of the interested guests at the meeting.

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C. B. J. Snyder of the Board of Governors and architect of the Board of Education of New York came down Saturday afternoon and thoroughly enjoyed the rest and the entertainment afforded by the discussions at the meeting.

The American Foundrymen's Association.

The seventh annual convention of the American Foundrymen's Association was held this week in Boston, Mass., the sessions taking place in Huntington Hall of the Massachusetts Institute of Technology. An excellent representation of the membership was in attendance, as well as a considerable number of persons connected in various capacities with the foundry trade. Owing to the death of the president of the association, J. G. Sadlier of Springfield, Ohio, the vice-president for New York and New Jersey, Walter F. Prince of Elizabethport, N. J., acted as chairman. The report of the secretary, Dr. Richard Moldenke, showed a prosperous year in the foundry trade; the difficulties encountered lay in getting materials rather than orders, all foundries abreast of the times making money. The report of the treasurer, Thomas D. West of Sharpsville, Pa., showed a satisfactory financial condition.

A number of interesting papers were read and discussed, and the various committees appointed at the last annual meeting made their reports. The committee on the foundry trade school, consisting of Messrs. West, Putnam and Moldenke, reported that no action had been taken, but urged the necessity of such an institution and the desirability of a decision by the association whether the work of establishing one should be conducted under their auspices or be left to outside effort. Ex-President J. S. Seaman of Pittsburgh stated that the Carnegie Institute in that city will undoubtedly have a foundry department, and suggested that it would probably meet this want. A. W. Slocum of Pittsburgh moved that the committee be discharged with thanks and that another committee be appointed to co-operate with the Pittsburgh Foundrymen's Association in conferring with the management of the Carnegie Institute in the endeavor to secure the establishment of a department to give instruction in foundry practice. The motion was adopted.

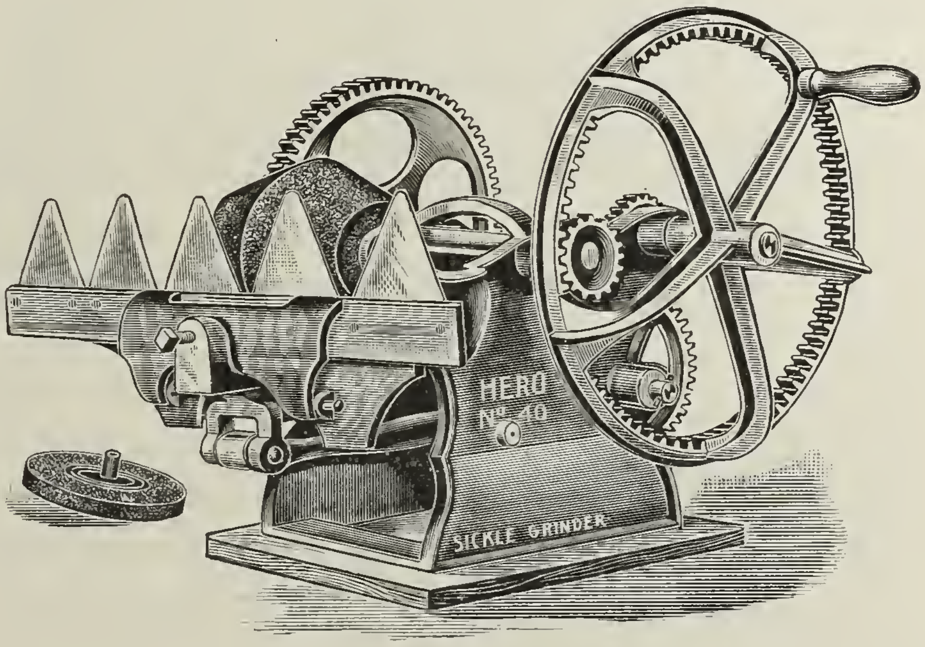
Production of Aluminum in 1901.

A bulletin just issued by the Geological Survey at Washington, D. C., contains the following paragraph concerning aluminum: The production of aluminum in the United States during 1901 amounted to 7,150,000 pounds. The Pittsburgh Reduction Company, operating the Hall patents, remain still the sole producer of aluminum in this country. The price of aluminum a pound remained practically stationary throughout the year, although the demand for the metal increased. The total imports of all forms of aluminum in 1901 were valued at $109,748, as compared with $50,444 in 1900.

In a recent examination of the fabric of St. Paul's Cathedral, London, it was found that under the coping of the balustrade surrounding the stone gallery at the base of the dome was a black deposit resembling boiler scale, about ¾ inch in thickness. This deposit has been subjected to a chemical analysis which revealed the curious fact that it is sulphate of lime, or gypsum. The chemical authorities believe that it was deposited by the atmosphere, and that in the past 200 years the smoke and gases from London chimneys have charged the rains with sufficient sulphurous and sulphuric acids to make this deposit.

Hero Section Knife and Tool Grinder No. 40.

The Robertson Mfg. Company, Buffalo, N. Y., are offering the section knife and tool grinder shown herewith. The knife holder is mounted on an oscillating arm having a reciprocating motion. The holder is hinged on the end of the arm, and has a suitable clamp screw with a handle for controlling the pressure of the knife to the wheel. It is also provided with a stop device at any point of contact, so that in case the knife has been broken at any place it may be ground out, thus avoiding grinding down the entire surface of the edge to sharpen the broken part. The motion of the arm can also be changed instantly from a stationary to a full stroke, or *vice versa*. The machine is provided with a screw adjustment to prevent the points of knives being ground off, allowing only sufficient contact with the abrasive to insure perfect grinding. The emery wheels furnished with machine are referred to as being made of the best Turkish emery of the standard pattern. The machine is supplied with one extra wheel, 6 x ¾ inch, and a special arbor for tool grinding. Saw gumming and sharpening wheels can be mounted on this arbor. The speed of the machine is stated to be 3000 to 5000 revolutions with ease; and the weight complete 21½ pounds. All parts, it is explained, are made of the best iron and steel. The point is made that farmers may take the grinder to the field for use in case of accident to section knives.



Hero Section Knife and Tool Grinder No. 40.

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Pound-Kilo Reference Table.

The continually increasing need of manufacturers and others of a comparative table giving the equivalents in kilograms (metric system) of pounds avoirdupois in the preparation of orders for export shipment, has led Charles B. Corwin, 15-25 Whitehall street, New York, manufacturers' export representative, to issue such a schedule gratuitously to any who choose to ask for it. The schedule is printed on a sheet of linen paper, 9½ x 8½ inches, of sufficient size to allow using large, well spaced figures which can be easily read. It will be remembered that with few exceptions the majority of foreign countries are using the metric system and in most orders for export the weight in kilos is obligatory. This sheet is designed for ready reference by shipping clerks and others having use for it, and being printed on but one side can be pasted on a board to hang if used in a packing room. Mr. Corwin refers to the table as undoubtedly correct, having been verified many times. We give below the principal part of the table, omitting the sixth double column, which gives the kilo equivalents of 200 to 20,000 pounds inclusive:

Pounds and Kilograms.—Comparative Table.

Lbs.	Kilos.	Lbs.	Kilos.	Lbs.	Kilos.	Lbs.	Kilos.	Lbs.	Kilos.
1	0.452	21	9.50	41	18.55	61	27.59	81	36.64
2	0.905	22	9.95	42	19.00	62	28.04	82	37.09
3	1.357	23	10.40	43	19.46	63	28.50	83	37.54
4	1.809	24	10.86	44	19.91	64	28.95	84	38.00
5	2.262	25	11.31	45	20.36	65	29.41	85	38.45
6	2.715	26	11.76	46	20.81	66	29.86	86	38.90
7	3.167	27	12.22	47	21.26	67	30.31	87	39.35
8	3.618	28	12.67	48	21.72	68	30.76	88	39.80
9	4.072	29	13.12	49	22.17	69	31.22	89	40.26
10	4.525	30	13.57	50	22.62	70	31.67	90	40.71
11	4.977	31	14.03	51	23.07	71	32.12	91	41.16
12	5.430	32	14.48	52	23.52	72	32.67	92	41.61
13	5.882	33	14.93	53	23.98	73	33.02	93	42.06
14	6.334	34	15.38	54	24.43	74	33.48	94	42.52
15	6.787	35	15.84	55	24.88	75	33.93	95	42.97
16	7.239	36	16.29	56	25.33	76	34.38	96	43.42
17	7.694	37	16.74	57	25.78	77	34.83	97	43.87
18	8.143	38	17.19	58	26.24	78	35.28	98	44.32
19	8.595	39	17.65	59	26.69	79	35.74	99	44.78
20	9.050	40	18.10	60	27.15	80	36.20	100	45.25

1 kilogram equals 2 1-5 pounds.

Do not put fractions of kilos on invoices or on packages; that is, discard a fraction of a kilo which is less than half a kilo, and regard a fraction greater than half a kilo as a whole kilo. Thus, 42.43 equals 42 kilos, and 42.63 equals 43 kilos.

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A New Mica Company.

A charter of incorporation has been granted by the Secretary of State of Ohio to the International Mica Mfg. Company of Columbus, organized with a capital stock of $500,000. The officers of the company are: President, E. J. Miller; vice-president, W. A. Ross; secretary and treasurer, A. B. Dawson; counsel, E. C. Hecox, and superintendent, Charles E. Ross. The company have been formed for the purpose of manufacturing different articles from mica. Their raw material will be provided principally by the Black Hills Mining Company, on whose property a large find of mica has been made recently. Among the goods which the new company will manufacture are mica for electrical purposes, stoves, lamp chimneys, fire proof paints, lubricants, insulators, &c. They will also furnish mica for use in the manufacture of wall paper, diaphragms for transmitters and receivers, and lining cable boxes, as well as refrigerator linings.

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The fire loss of the United States and Canada in the month of May, as compiled from the records of the New York *Journal of Commerce*, shows a total of $14,866,000, as compared with $13,894,000 in the preceding month and $22,380,000 in May, 1901, which last sum was swollen by the Jacksonville conflagration. The total fire loss for the five months ended May 31 is placed at $76,860,500, which is about $2,500,000 less than in the corresponding period of 1901 and $5,000,000 less than 1900.

A TIME LIMIT AND DRY WALLS NECESSARY IN TESTING A HEATING PLANT.*

BY JOHN GORMLY.

The writer had an opportunity to make partial heating tests in a new building during the past winter. While the tests are incomplete, our society is here given the benefit of the data obtained, because they appear to have a direct bearing on our proposed heating code in its practical application.

The building tested is a three-story and basement dwelling. The basement is not heated other than by the heat escaping from the uncovered heater and the main pipes. The first, second and third floors are heated by low pressure direct steam radiators; in all rooms the style of radiator is wall pattern.

The first floor and basement are of stone, the second floor is wood shingled, the third floor and roof are slate. The building is furred on the first floor and lined with building paper under the shingles. The house stands on an open lot exposed to winds from all directions. At the time of making the tests the building was without fire for two weeks. During that interval the temperature was for a good portion of the time as low as 20 degrees Fahrenheit.

When the plant was installed, before the walls were plastered, while window and door frames were so loosely fitted into the walls that the hand and arm could readily be passed out through holes between the frames and the wall, 10 pounds of steam were raised on the entire plant in a steaming test, although no window sash were in position; but the window openings were covered with thin muslin to prevent too great an escape of heat. The plant was able to raise more than 10 pounds of steam on the gauge; but as the safety valve was set at 10 pounds, that was the limit of steam pressure raised on a firing test. At this time the outside temperature was about 20 degrees above zero.

As soon as wet plaster was placed on the walls no pressure whatever could be raised to show on the gauge, although the plant was fired as hard as possible; the draft was excellent; anthracite coal, pea size, was used; all pipes and radiators were hot to the touch. The wet walls and saturated air appeared to absorb the heat as a sponge absorbs water. Although all holes around window frames were now closed by the plaster and the building was comparatively tight, we could not show 1 pound of steam on the plant, which showed 10 pounds readily while the building was so very open. The situation was not perceptibly altered after window sash were fitted to the window openings, which up to this time were covered with muslin. The window glass quickly was covered with ice, as the moisture evaporated from the wet plaster froze to the surface of the glass. The plant was run in this condition for several weeks to dry the plaster. After the white finishing coat of plaster was put on and partly dried, but still damp enough to be readily indented by the finger, the building was left for two weeks without fire. We thus had an opportunity to make some temperature tests. Our tests continued for a portion of two days. The result of our tests is appended.

Attention is called to the improvement in pressure and also in temperature, as shown by the second day's test, over the tests of the first day. We will take the readings at 9.30 on each day. The outside thermometer shows an increase of 8 degrees on the second floor, while in the parlor we show an increase of 26 degrees, in the first floor entry 28 degrees, third floor front 30 degrees, and in all rooms we show an increase over the first day's record. A comparison of the first and second days' readings would appear to be conclusive evidence that some time limit should be set in the use of our proposed testing code.

Also a note should accompany the code, stating that the walls of a building must be reasonably dry to get any fair estimate of the power of a heating plant. It is to be regretted that the party making the test neglected to keep a record of outside and inside temperatures for a longer time on the first day; but as he was not seeking comparative tests and was intent only on finding the highest temperatures he could obtain in the various rooms, he devoted the first day to warming the walls up preparatory to a test to be made the second day.

The horizontal line from 12 to 2 o'clock on the second day's test, the result of cleaning and recoaling the fire, is apparent. The same effect is shown in the first day's test from 11.30 to 12 o'clock. The relatively

Time	*8* 8	*8.30* 8.30	*9* 9	*9.30* 9.30	*10* 10	*10.30* 10.30	*11* 11	*11.30* 11.30	*12* 12	*12.30* 12.30	*1* 1	*1.30* 1.30	*2* 2	*2.30* 2.30	*3* 3	*3.30* 3.30	*4* 4	*4.30* 4.30	2d Day in Roman letting *1st Day in Italic letting* 12 o'clock raked and fired up. 3-4 P.M. Cloudy Front of House-South Entry to west-ward.
Outside Temperature	56	56.5	57	*50* 58	*53* 58	*55* 60	*57* 61	*60* 62	63	61		58		58	58	58	56	55.5	
Parlor	71	*49* 73	76	*54* 80	*59.5* 82	*64* 83	*67* 84	*70* 85	*71* 86	*74* 87	*75* 87	87	87	88	88	88	88	88	
Dining Room	71	*52* 73	77	*56* 78	*62* 80	*67.5* 82	*68* 83	*70* 84	*72* 85	*75* 86	*76* 86	86	86	86.25	87	87	87	87	
Kitchen	68	*50* 70	74	*54* 76	*58* 78	*62.5* 80	*64* 80	*66* 81	*66* 82	*67* 83	*68* 83	*69* 83	83	83.5	84	83.5	83	84	
1st. Floor Entry	70	*49* 72	76	*52* 80	*58* 82	*63* 84	*66* 85	*70* 86	*70* 87	*72* 88	*73* 88	88	88	88.5	89	89.25	89.25	90	
2d. Floor Front	73	*51* 73	78	*54* 82	*61.5* 84	*67* 86	*71* 88	*76* 89	*76* 90	*78* 90	*79* 90	90	90	90	93	93.25	92	94	
2d. Floor Next	74	*52* 75	78	*57* 81	*63.5* 83	*67* 84	*68.5* 86	*72* 87	*72* 88	*74* 88	*74.5* 88	88	88	88	89	89	88	88	
2d. Bath	74	*52* 76	78	*57* 79	*61* 81	*62* 82	*64* 84	*67* 84	*67* 86	*68* 86	*70* 86	*71* 86	86	86.5	87	87.25	87	87	
2d. Rear	72	*52* 72	75	*53* 78	*59.5* 80	*62* 81	*63* 82	*66* 84	*67* 85	*69* 85	*70* 85	85	85	85	86	87	86	85	
2d. Entry	73	*50* 73	76	*51* 79	*56* 80	*60* 82	*63* 83	*68* 84	*68* 86	*71* 86	*71* 86	86	86	86	87	87	86	87	
3d. Front	76	*52* 76	80	*54* 84	*60* 87	*69* 88	*73* 90	*78* 91	*82* 92	*84* 94	*84* 94	94	*86* 94	94	94.5	95	96	96	
3d., Next	74	*50* 74	78	*54* 81	*61* 83	*67* 84	*69* 86	*74* 87	*74* 88	*79* 90	*80* 90	90	*80* 90	90	90	90	90	90	
3d. Rear	72	*51* 72	75	*52* 78	*59.5* 80	*63* 82	*65* 83	*69* 84	*70* 86	*74* 87	*74.5* 87	87	*77* 87	86	86	87	86	85	
3d. Entry	72	*49* 72	74	*50* 78	*52* 80	*57* 80	*59* 82	*62* 84	*63* 84	*68* 86	*69* 86	86	86	86	86	86	86	86	
Boiler Pressure		*0*	*0*	*0*	*0*	*0*	*10*	*6*	*Water*	*2.5*	*1.75*		*4.5*						
Boiler Pressure	0	0	3	6	7.5	7	7.5	9	8.5	8.5	8	8	8	8	8	8	8	8.75	

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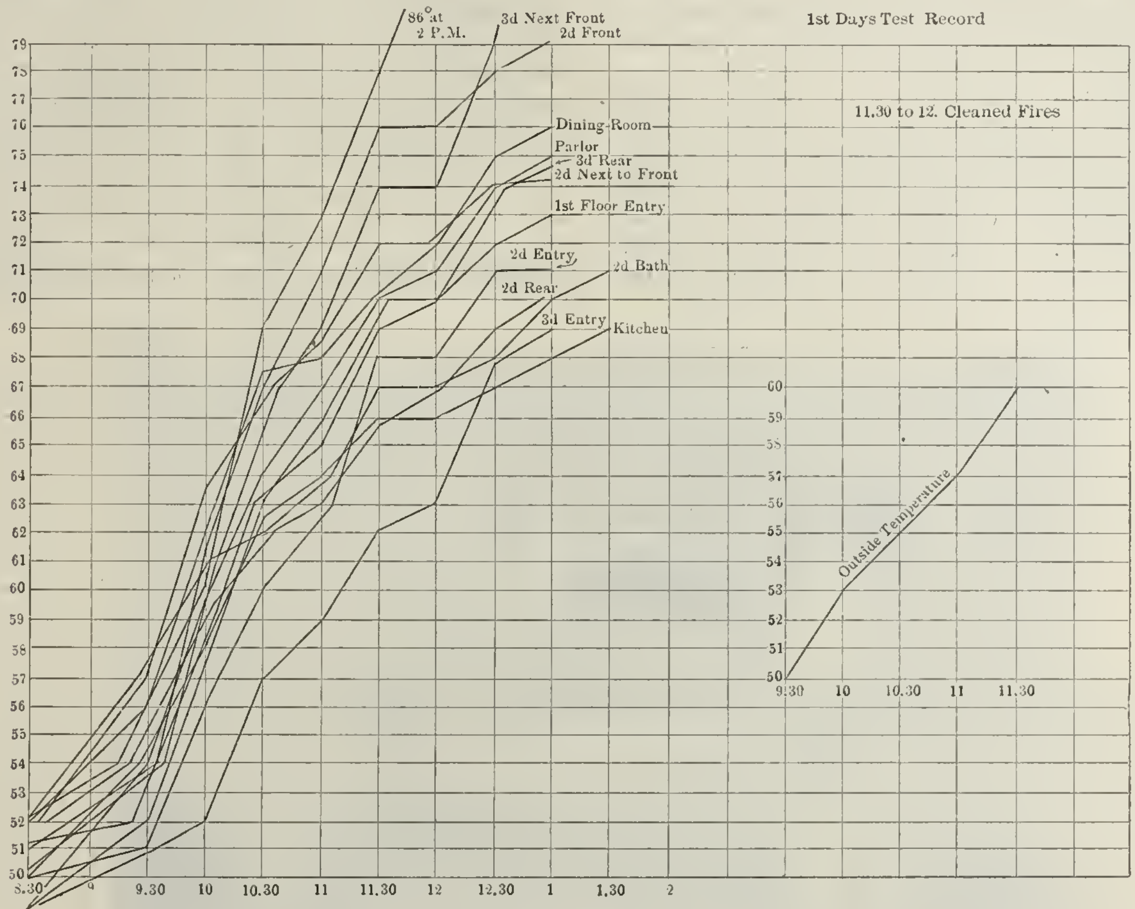
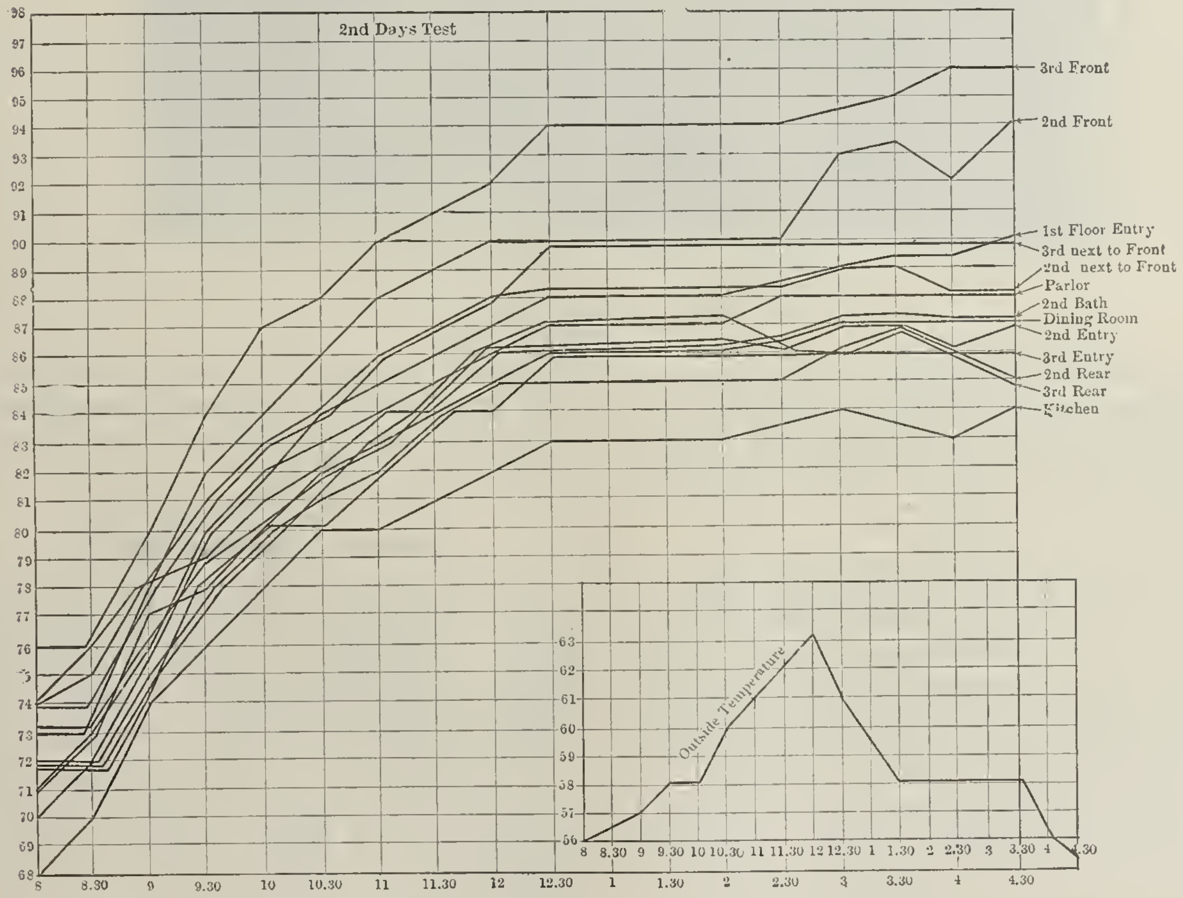
* Paper read at the summer meeting of the American Society of Heating and Ventilating Engineers, at Atlantic City, N. J., June 16, 1902.

higher temperatures of the second and third floor front rooms are due to the direct action of the sun from 3.30 to 4 o'clock. On the second day's record the temperature of the front rooms fell because of the passing of a dense cloud. It would appear from the records of this test that no true test can be made where the walls are damp or where an effort is made to complete a temperature test in too short a time. On massive walls which have been subjected to intense cold for a time before the test is made no test of one day's duration will give even approximate temperature readings of what a plant will do continuously.





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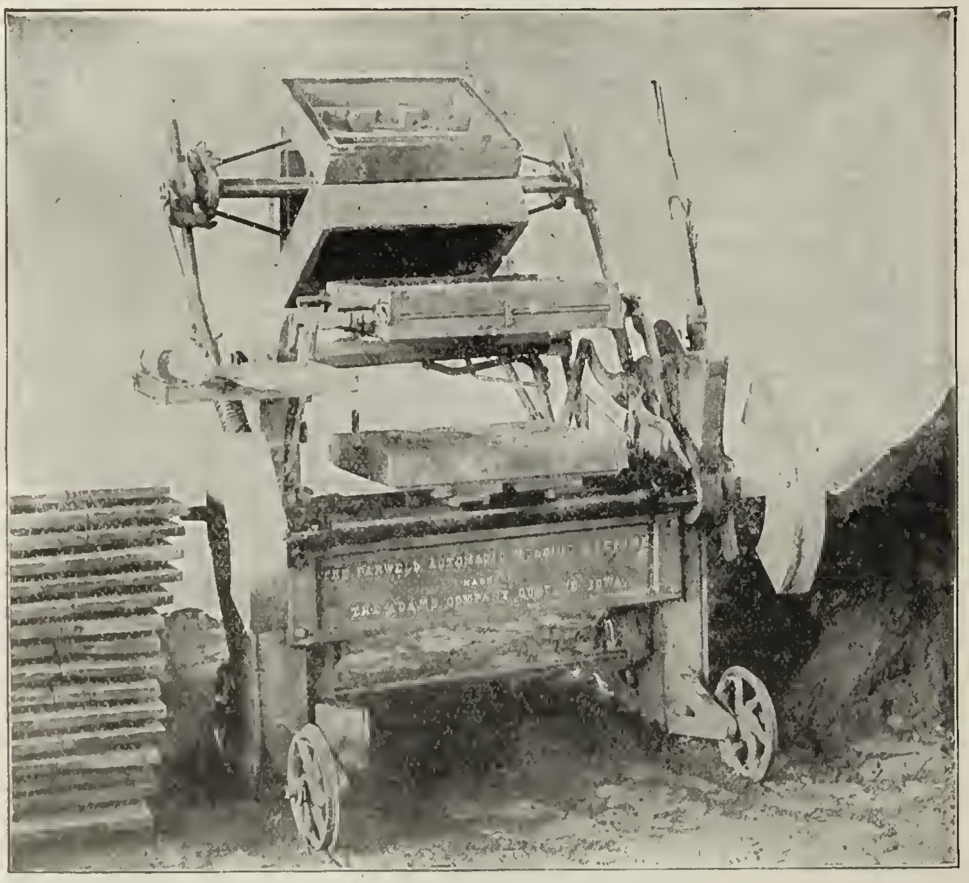
In view of the continually expanding use of celluloid for all sorts of purposes, it will be well for all to remember that celluloid is a highly combustible substance. Not long ago, according to *Fire and Water*, a number of insurance officials were at a dinner in honor of one of their number, and in the course of the after dinner oratory one of the speakers, to make room for the utterance of his eloquent remarks, took a cigar out of his mouth and laid it on the table. The lighted end of the cigar happened to come in contact with the celluloid handle of a dessert knife, and in a moment there was a bright flash and the celluloid covering of the handle began to blaze. The fire was extinguished by plunging the handle of the knife into a finger bowl; but it may be assumed that the insurance men present made a mental memorandum of the properties of celluloid as a fire hazard.

The Farwell Automatic Molding Machine.

The Farwell automatic molding machine, built by the Adams Company of Dubuque, Iowa. is designed to make complete snap mold. It is used with a solid iron tapering flask and match plates, or, as sometimes called, patterns on a plate. By a few rapid and easy motions the operator allows the pattern plate to slide between the cope and drag, and after filling the drag with sand and placing on the bottom board the flask is turned over, the cope is then filled with sand, and the entire mold pressed at once.

The turret top is arranged to do any special peining, and can be made to cut sprues or draw flat gates automatically. The turret top is not necessary for all work, as peining can be done by making the presser board and bottom board of special design. The operation of this machine is simple, and an intelligent molder can understand it in a few hours. One of these machines is now in the ninth year of successful service in the foundry of the Adams Company. It has produced over 700,000 castings, weighing about 8 pounds each, and from the outlook to-day the machine bids fair to continue its usefulness for many years.



The Farwell Automatic Molding Machine.

The Oak and Oakvale Andes Heating Stoves.

We have received from the Phillips & Clark Stove Company, Geneva, N. Y., photographs of two handsome Oak stoves which they have just placed upon the market. They are offered under the names of Oakvale Andes and Oak Andes, and embody features of construction and ornamentation which cannot fail to command the attention of an intelligent trade. The company claim that constructively the Oakvale Andes represents an entirely new idea, in that it is a full return flue Oak stove, with tea kettle attachment, elbow, dust damper, &c., embodying all the essential features of a strictly first-class base burning self feeder. At the same time the point is made that it retains the effective heating features and quality of the best Oak stove. It is made in four sizes. In its ornamentation it is rich and effective, the outlines being graceful and well proportioned. The ash pit section is treated with cast ornamentation in combination with circular nickeled panels; the fire pot is concealed by an open work apron, or foot rail, nickel plated, extending around the front and sides, the front panel carrying the name of the stove. The drum section is effectively treated on both front and sides, while directly above the feed door is a nickeled panel carrying the number of the stove. The top is made to swing and is surmounted by a spun urn of conventional design.

The Oak Andes is a very neat construction, somewhat smaller than the one just described. It is especially well made, has large ash pan, double doors, air tight register dampers, automatic cover in the top, elbow with register and triangular grate. In the ornamentation of the stove nickel has been judiciously employed in combination with the black iron surfaces, and the result is an attractive whole. The fire pot section is covered with a depending foot rail carrying nickel plated fret work, which adds somewhat to the substantial appearance of the heater. The drum section has a cast front and the swing top is surmounted by a spun urn of the same design as that shown in connection with the Oakvale Andes. Considered as a whole, these two constructions cannot fail to be regarded by the trade as very creditable additions to the company's already extensive assortment of heating stoves.

Artistic Enameled Ranges.

We have received from the St. Louis Enameling Company. Ninth and Monroe streets, St. Louis, Mo., a copy of an interesting pamphlet which they have issued, illustrating and describing what is known as the Artistic enameled steel range. The entire body is constructed of cold rolled steel plate, with extra heavy gray iron castings used for the parts that come in direct contact with the fire. The makers state that the draft door on the range is an original feature, it being controlled by means of an eccentric which permits the door to stand at any angle, and which draws it up tight into the recessed flange. The ash door is made in the same way, thus enabling every opening under the fire to be closed perfectly tight. Another improvement in the Artistic is illustrated by the flues, the draft passing around the oven in such a way that its entire surface is subjected to the heat. The oven may be removed, as also can the walls of the range.

In its external treatment, the range is not japanned like other steel ranges. nor coated like granite or enameled ware, but by the company's special Artistic process. The method is to fuse the enamel with the steel under a very high temperature, the enamel penetrating the pores of the steel during the process and appearing on both sides. The claim is made that it cannot therefore either burn or scale off, nor can moisture penetrate the surface. In the catalogue before us the illustrations are presented in a way to give as nearly as possible a faithful representation of the ranges as they actually appear. This is done by means of colored printing, one style of range being finished in "blue mottle," another in "delft," a third in "brown mottle," while others are in "white" and "artistic blue." The ranges are intended for burning hard or soft coal or wood, and are supplied with high shelf, closet, reservoir, or water front, according to requirements. Several pages in the catalogue are given up to testimonial letters from some of those who have used enameled steel ranges.

FOUNDRYMEN VISIT THE WALKER & PRATT STOVE FOUNDRY.

Wednesday of this week was a gala day at the stove factory of the Walker & Pratt Mfg. Company, Watertown, Mass. The American Foundrymen's Association held their annual convention at Boston on Tuesday, Wednesday and Thursday. On Wednesday afternoon they were taken to the stove works for the purpose of seeing a strictly modern stove foundry. To make the trip as enjoyable as possible, the Local Entertainment Committee provided conveyances, consisting of 24 carriages and 18 drags, which afforded accommodations for about 200 foundrymen and their ladies. The party embarked at the Hotel Brunswick in Boston, and after a drive of about an hour and a half through the parks and over fine roads, amid most delightful scenery, arrived at Watertown. Here they were received by A. W. Walker, B. M. Shaw and other officers of the company, who started the party on a tour of inspection. The visitors were delighted to find that the reports of the completeness of this establishment had not been exaggerated.

The works occupy a tract of land comprising about 15 acres, of which 3 acres are covered by buildings, having about 127,000 square feet under roof. The grounds around the works are beautifully laid out, presenting a park-like appearance. The grass is kept neatly cut, and numerous flower beds occupy conspicuous places. The buildings are in keeping with this setting, being attractive in design and finish. Every care was taken for the comfort and convenience of the visitors. They were escorted through the factory over a prescribed route, indicated by white gloved boys placed at various turns. The course lay through the office, sample room, mounting department, mill room, pattern building, foundry, core room, lavatory, stock room, power house and warehouse, back to the place of beginning. The total length of this route was half a mile.

While everything was interesting, by reason of orderly arrangement and scrupulous neatness, the foundry and its appurtenances were especially attractive to the visitors. The foundry has cement or granolithic passageways, which are always clean. The ladles containing the molten iron for pouring are conveyed from the cupola to the various floors by trolleys running on an overhead track, hung from the roof trusses. The lavatory for the men could hardly be finer if intended for the officers. All the appliances are such as to inculcate cleanliness. The wash basins are of marble with mirrors over them, and 100 separate bathing rooms are provided in which the men can bathe themselves before leaving the works. Everywhere through the factory indications of thoughtfulness for the comfort of the men were to be seen. For instance, a coffee room is conveniently located in a portion of the factory, in which the workmen are furnished with coffee at the nominal charge of 3 cents a cup, or 13 cups for 25 cents.

The dimensions of the principal buildings are as follows: Molding shop, 122 x 215 feet; molders' lavatory, 36 x 105 feet; manufacturing building, 112 x 282 feet; warehouse, 152 x 182 feet; pattern building, 60 x 300 feet. The works are located on a branch of the Boston & Maine Railroad, giving them the best railroad facilities. They manufacture ranges, stoves and boilers for steam and hot water heating.

After the visitors had been escorted through the factory they were taken to a tent, which had been erected on the lawn, and served with a dainty collation. All the details connected with the reception of the visitors showed the utmost thoughtfulness on the part of the representatives of the company. An instance of this is observed in the fact that the services of a physician and surgeon had been secured, so that in case an accident had happened to any of the party skilled attention could have been given at once. The excursionists left the ground at 5 o'clock, greatly pleased with what they had seen, and unquestionably with a very high admiration for the products of the company. It will be surprising if there is not a greatly increased demand for the Walker & Pratt products as a result of the kindly feeling engendered by this visit of so many people from different parts of the country.

The fact may be noted in this connection that at the meeting of the association on Thursday evening the annual election of officers occurred, and A. W. Walker, president of the Walker & Pratt Mfg. Company, was unanimously elected president. This honor was conferred not simply as an acknowledgment of what he had done to make the Boston convention a success, but to secure for the association the services in an official capacity of a man who has shown himself thoroughly practical and progressive in developing the founder's art.

William Corry.

William Corry, the veteran stove man of Water street, New York, so well known to the manufacturers and dealers of the United States, and formerly of the firm of Southard, Robertson & Co., will assume the management of the Stove Manufacturers' Repair Association, 230 Water street, which was formerly under the charge of W. B. Betts, lately deceased. Mr. Betts died suddenly on Thursday, June 19. Mr. Corry has enjoyed a long vacation, much to his physical benefit and, it is whispered, to his financial good also. The latter he denies. He says he is "the victim of too much zealousness on the part of the city fusion government, as they propose to clean out the tramps and won't allow them to run on my beloved Bowery. A fellow has got to make a show or a bluff that he is either a capitalist or a workman, as hundred-dollar millionaires do not go with the captain or the wardman now. So they just run me back to Water street. Ever since Johnnie Allen and Kit Burns quit the street it does not look natural, but they could not all be with us."

ODD PLATES.

Charles A. Stockstrom of the American Stove Company has purchased a lot on South Ninth street, near Chouteau avenue, St. Louis, Mo., immediately adjoining the plant of the Quick Meal Stove Company. The rapidly increasing business of this division of the American Stove Company is such as to necessitate greater facilities, and some new factory buildings will be erected in the near future.

Plans have been prepared for the new plant of the Wireton Heating Company, at Chicago Heights, Ill., to replace the company's former plant at Blue Island, that was destroyed by fire early in the year. The buildings will include a foundry, machine and tin shop, boiler and engine house and warehouse, the latter covering 100 x 200 feet. All the buildings will be of brick and stone and of mill construction. The total cost of the plant is estimated at $125,000.

The S. Obermayer Company, manufacturers and dealers in Foundry Equipments and Supplies, are operating their three plants at Cincinnati, Chicago and Larimer on double turn, in order to keep pace with their business, which has been very heavy.

The Chattanooga Stove Company, Chattanooga, Tenn., have contracted for an additional four-story building. 50 x 150 feet, to cost $15,000. They have also decided upon increasing their molding department to about double its present capacity.

A. C. Werner and C. H. Henderson have consolidated their business under the firm name of Werner & Henderson, at 18-28 Grand avenue, Kansas City, Mo. The company handle the Graff Furnace Company's Hero and Comfort Warm Air Furnaces. Mr. Henderson has been the Graff Company's agent for several years and has succeeded in placing a large number of their Furnaces in Kansas City. The firm are also manufacturers of Galvanized Iron Cornices, Skylights, Guttering and Spouting, &c.

The new foundry of the Peck-Williamson Heating & Ventilating Company of Cincinnati, Ohio, to be erected at Wellston, Ohio, will have capacity of 100 tons a day and will be operated by a new company, to be called the Peck-Williamson Foundry Company, with a capital of about $100,000. The stock of the company will be held entirely by the parent concern at Cincinnati, and the concern will not only manufacture Castings for their own use, but will also do a general jobbing foundry business.

The Nickel Plate Stove Polish Company, Chicago, Ill., have just placed upon the market a new Stove Polish which they have named the Black Kid. They feel so well convinced that it will give entire satisfaction that they recommend those who purchase it not to pay for it if it is not the best ever used. What the company have to say in their announcement in another part of this issue may not be without interest to Stove and Hardware dealers generally.

The Kinsey Mfg. Company of Dayton, Ohio, have just been incorporated with a capital stock of $50,000, for the purpose of engaging in the manufacture of Stoves.

During the past week engineers have been engaged in laying out the ground at Beaver Falls, Pa., for the new plant of the Pittsburgh Stove & Range Company.

Colors That Harmonize.

United States Consul-General Richard Guenther of Frankfort, Germany, sends to the State Department a report on the painting of machinery, taken from the *Welthandel* of that city, which contains some suggestions that may be of use to some of our readers, especially those who are taking up the decoration of stamped sheet metal interior fittings. The authority quoted says, relative to the painting of machinery, it has been found that a great lack of taste is often apparent. The machines are frequently smeared over with the loudest colors, which harmonize poorly, hurt the eye and spoil the general effect of the machine. For instance, machines have been observed where brilliant red and scarlet were combined with brilliant blue and yellow in the most peculiar manner. Such a combination of colors, of course, violates all the laws of harmony, which demand that one color should supplement the other, in order to make the whole appear well proportioned and pleasing to the eye.

A correspondent, writing to an English technical journal, says that the supplemental color of red is green, of blue, orange, and of yellow, violet. Strict rules, however, cannot be fixed, as much depends upon the artistic taste if intelligent eyes are consulted. The following hints as to artistic color contrasts, however, may be found useful:

1. Black and deep brown.
2. Violet and light green.
3. Violet and light rose.
4. Deep blue and golden brown.
5. Chocolate brown and light blue.
6. Dark red and gray.
7. Chestnut brown and deep green.
8. Dark blue and light red.
9. Chocolate brown and pea green.
10. Chestnut brown and deep blue.
11. Claret color and reddish yellow.
12. Black and deep green.
13. Slate with almost all light colors, except blue.
14. Reddish yellow and black.
15. Reddish yellow and blue or lilac.

Increase in the World's Copper Production.

In the annual statistics of the world's principal copper supplies issued by Henry R. Merton & Co., Limited, of London, a general increase of production abroad is noted for 1901, while in this country a slight decline is shown. The latter can be accounted for by the curtailment of operations due to litigation and to accidents. The total increase for 1901 above 1900 was 26,092 tons. In the matter of increase Canada is foremost, with 10,300 tons beyond the figures of the year previous. Australia increased almost 8000 tons and Chile went 4300 tons higher than in 1900. Practically all other producing countries increased with the exception of the United States, where a decrease of 1317 tons is noted. The table shows that in this country there was a 1000-ton reduction in the case of Calumet & Hecla, but other lake producers gained 2899 tons. The Montana district lost 8787 tons, and Arizona gained 4803 tons. Other States lost 1292 tons, as compared with the year previous.

Below we give a summary of the table showing the totals for the last three years:

In tons of 2240 pounds.

	1901.	1900.	1899.
United States	267,410	268,787	262,206
Canada	18,800	8,500	6,730
Spain and Portugal	53,621	52,872	52,168
Chile	30,000	25,700	25,000
Japan	27,475	27,840	28,310
Germany	21,720	20,410	23,460
Mexico	23,795	22,050	19,335
Australia	30,875	23,000	20,750
Cape of Good Hope	6,400	6,720	6,490
Russia	8,000	8,000	7,210
All other countries	24,030	22,160	20,351
Totals	512,131	486,039	472,244

The figures for the United States should be received with reserve, since they are not official.

To Avoid the Expense of Filters.

A new plan has been proposed at Pittsburgh, Pa., says *Fire and Water*, to avoid the expense of filtration as the Board of Public Works intends the process to be carried on. The city should buy Six-Mile or Nine-Mile Island and dredge out a basin 20 feet deep, 300 or 400 feet in width and 1000 feet long; throw up an embankment around the outside 10 feet higher than high water mark, and riprap around the outside so that it should not be washed away or damaged during floods. The water of the Allegheny River flows over sand and gravel with a thickness of 20 feet and there is an undercurrent of water passing through this gravel and sand. By the building of the mammoth well suggested it is figured the basin would fill with water passing through this sand bed—thus ridding it of the impurities with which it is impregnated in its raw state. The fear of some that the sand and gravel would become clogged in years and render the process of cheap filtration ineffective is held to be groundless. The flow of the water through the gravel has continued for generations, and it fills all the water wells that are put down on both sides of the valley. Official tests, however, have demonstrated that at Brilliant while the filtering of the water through the sand and gravel of the bed of the river rendered the water somewhat purer, still it added hardness to it, and Superintendent Shepherd declares that it could not be used for steam making purposes. The quality of water would doubtless be the same in the proposed big basin plan as in the driven wells at the side of the river.

The threatened strike of the molders in the Pittsburgh district has been averted. The National Founders' Association has given the men an advance of about 6.66 per cent., with a minimum rate of $3 per day. The men asked for an advance of 10 per cent. and a minimum rate of $3.30 per day, but their demand was compromised. The new scale of wages is in effect for one year from July 1 next.

The Twentieth Annual Convention of the National Association of Master Plumbers.

Tuesday, June 17, opened with a cool, bracing air after a rainstorm, and Atlantic City, N. J., was at its best when the twentieth annual convention of the National Association of Master Plumbers, with more than 400 delegates, was called to order by President E. D. Hornbrook at 11.15 a.m.

The president appointed Frank Walsh and John Moore sergeants-at-arms, and instructed them to see that no delegate left the hall without an excuse. The expenses of delegates are paid by the local association, so that they may attend the conventions, transact its business and report its acts for their information. The officers, therefore, should not allow the delegates to leave the hall.

Owing to Mayor Franklin P. Stoy being detained at the Hotel Marlborough to welcome the Southern Hardware Jobbers' Association, Van Buren Giffen of the Atlantic City Master Plumbers' Association, on behalf of the Mayor and his city, extended a hearty welcome to the delegates. He said: "I am surprised to see so many delegates from all over the country. Our association having only recently become connected with the national body had nothing to do with your coming to Atlantic City, but we welcome you and promise to make your stay one of pleasure and benefit. I give you, on behalf of the Mayor, the freedom of the city."

President Hornbrook expressed the thanks of the delegates and their pleasure at being so pleasantly welcomed by one of the trade.

The president then addressed the convention, expressing his pleasure at seeing so large a number present. He said that matters of importance would come up that should interest every member, and hoped that no one would consider pleasure before duty. If the delegates would give attention to the meetings and report to their associations the national officers would not be asked questions that have been answered in print years ago. Mr. Hornbrook then announced the following Credential Committee: D. J. Shannon, J. E. Holmes, J. King, Ira Budd and Chris Irving.

The Convention Entertained.

While the Credential Committee were completing their report the convention was entertained with recitations. Mr. Hitchcock recited "The Man They Call the Plumber" and "Universal Brotherhood." William McCoach gave a new version of "Barbara Frietchie," and P. H. Callahan recited "When Casey Slugged the Ball," the last verse of which is as follows:

> Now he keeps a plumbing shop,
> He's Mayor of the town,
> He puts in pumps and water tanks
> In all the country 'round.

He also gave "Little Jim," and secured the lion's share of the applause.

Daniel Shannon then presented the report of the Credential Committee, showing the following delegates in attendance:

List of Delegates.

ALABAMA.

Anniston, D. A. Farrell.
Birmingham, C. R. Ross, R. W. Gayle.
Huntsville, A. J. Murdock.
Mobile, Thos. J. Young, Chas. J. Simmons, Sam'l D. Copeland.
Talladega, P. E. Michael.

ARKANSAS.

Fort Smith, August Richert.
Hot Springs, G. A. Callahan.

CALIFORNIA.

Los Angeles, C. H. Mannell, L. A. Scholes, T. J. Stephens, C. T. Paul, Geo. Howe, A. H. Longley.
San Francisco, J. L. E. Firmin, W. W. Wilson, G. C. Sweeney, G. C. Dallamore, J. McCusker, J. Looney, S. Peterson, M. Cohen, A. Newmark, E. Snook, G. Eastman, G. Young, E. Grundy, James E. Britt.

COLORADO.

Denver, Chris Irving, Peter E. Snow, Jas. J. Johnson, J. F. Van Daniker, Jas. J. Small, Roderick McIver, J. H. Winters, George E. Smith, W. T. Crean, Thos. H. O'Brien, P. H. Balfe.

CONNECTICUT.

Bridgeport, M. W. Manwaring, J. F. Brady, L. H. Mills, F. O. Booth.
Middletown, James Donovan.
New Haven, Clinton E. Coe, Thos. W. Corbett, Peter F. Connelly, S. E. Dibble.
Waterbury, Thos. D. Barlow, G. W. Minor, L. H. Toucy.

DELAWARE.

Wilmington, Alfred Gawthrop, Isaiah N. Eaton, Jesse K. Hanby, Jas. F. Traynor, Patrick F. Walsh.

DISTRICT OF COLUMBIA.

Washington, Ed. J. Hannan, Walter D. Nolan, D. J. Murphy, Jos. R. Quinter, P. B. Caverly, Dan'l Hannan, Wm. Mendenhall, William Koch, Chas. E. Barrick.

FLORIDA.

Dayton, G. P. Ballough.
Pensacola, H. W. Stafford.
Jacksonville, M. P. Hooker, Wm. Clarke, A. G. Johnson.

ILLINOIS.

Aurora, D. A. McGuire, H. O. Fenske.
Chicago, D. J. Hickey, Wm. Redleske, C. J. Herbert, J. B. Ryan, Pat'k Sanders, M. J. Corboy, A. G. Hickey, L. R. Bain, David Whiteford, Jos. Scheuer, A. E. Mortimer, John Sanders, Thos. Conlin, Wm. J. Lang, A. K. Mose, J. L. Corcoran, J. J. Wade, J. W. Brunt, J. G. Weber, Jos. Reilly, C. C. Breyer, C. J. Boyd, C. T. Byrne.
East St. Louis, T. Kickham, W. C. Thrasher.
Peoria, E. B. Hazen, W. Hitchcock, Dan O'Connor.

INDIANA.

Muncie, H. H. Highlands, David H. Murphy, J. A. Gallivan, F. W. Stacy.
Richmond, E. W. Craighead, Charles Johanning, Henry C. Hieger.
Anderson, Frank C. McCall, Walter H. Powell.
Elkhart, F. L. Marchesseau.
Fort Wayne, Byron E. Hattersley, Emmett Martin.
Indianapolis, E. A. Strong, J. F. Haslinger, J. W. Marshall, J. C. Hayes, C. W. Meikel, J. D. McGauley, E. E. Holmes, J. D. Wallace.
La Fayette, Abner E. Werkhoff, Geo. B. Wallace.
Marion, H. W. St. John, W. F. Gillespie.
South Bend, John Wahlen, Wm. P. Draper.

IOWA.

Des Moines, A. H. Walker.
Sioux City, H. W. Noble.
Dubuque, John McDermott.
Davenport, Robert Clayton.

KANSAS.

State Association, C. States, E. P. Edson, Topeka; A. P. Elder, Ottawa.

MAINE.

Lewiston, John B. Smith.

MARYLAND.

Baltimore, John Trainor, Lloyd E. Mitchell, Walter W. Rowles, Edward Zimmisch, Samuel Bennett, Edward J. Burke, Wm. H. Rothrock, Jas. Trainor, Thos. B. Coland, Henry Bowman, Henry Koethe, Allen W. Beam, Wm. E. Alford, P. T. Barry.
Cumberland, Geo. E. Ways.

MASSACHUSETTS.

Boston, Dan'l Shannon, Frank O. Johnson, J. Warren French, Edward C. Kelley, John P. Drury, Daniel G. Finnerty, Jas. McConnell, David Craig, John W. Cosden, John C. McCoole, John K. Tully, Thomas J. Tute, Thos. F. Martin, Wm. K. McKenna, Jos. W. Barry, Robt. F. Brown.
Lowell, Chas. H. Hobson, Wm. F. Farrell, John E. Drury, Richard J. Welch.
Lynn, Warren F. Browne, Clement T. Dame.

MICHIGAN.

Ann Arbor, T. F. Hutzel.
Detroit, S. H. Morgan, Thos. E. Norris, James W. Barton, Ben Guiney, Ed. J. Ryan, M. O'Connor, Jos. E. Lee, Christian P. Tietze, Ernest Venn, L. Schwartz.
Grand Rapids, Andrew A. Muir, Oscar P. Workman, Wm. S. Barnett.

MINNESOTA.

Minneapolis, J. M. Jacobsen, W. W. Hoopes, O. A. Blethen, A. W. Scott, W. B. Hobart, J. L. Hague, F. H. Schuler, A. A. George.
St. Paul, Allen Black, John Holt, John H. Shea, M. J. O'Neil, Thos. E. King.

MISSOURI.

St. Joseph, Samuel H. Powers.
St. Louis, Jas. P. Carroll, Jeremiah Sheehan, John J. Foy, Edw. Quiun, John F. Corrigan, Jacob Ruedi, Jas. Fitzgerald, Wm. Ryffel, F. A. Brandt, P. H. Callahan, O. B. Hervers, Jos. Tacke, A. L. Kiel, Geo. Meyer, Jno. Frost, L. Kiernan, A. F. Pettig, Chas. Abel, Thos. J. Sheehan, Jno. J. McCue, Jno. Gilmore, Jos. M. Fassell.
Kansas City, R. J. Cathcart, Wm. Warmholz, C. L. Smith, John F. Mallon,, Ed. Farley, Timothy Cotter, W. L. Hudson, E. D. Hornbrook.

NEW HAMPSHIRE.

Nashua, Chas. B. Jackman, C. H. Avery.

NEW JERSEY.

Atlantic City, B. C. Freeman, V. B. Giffin, Chas. Schroeder, Thos. D. McDevitt.
Passaic, Geo. S. Aldous, Wm. Brooks, John Collins.
Newark, Ira J. Budd, Wm. Jacobi, Geo. Crawley, Robt. Zeitler, S. J. Wilson, A. S. Walker, R. Schmidt, E. A. Bleything, Wm. Demars, C. P. Zineman, Robt. Berla.
Montclair, I. S. Crane, L. D. Elserman.

NEW YORK.

Rochester, Wm. G. Reid.
Niagara Falls, J. H. Ellenbaum, C. J. Elderfield.
Binghamton, Geo. Cropper, C. E. Boughton, T. J. Cronin.
Elmira, Geo. A. Walker.
Albany, Frank F. Schimpf, J. H. Moran, John L. Fitzgerald.
New York City, Andrew H. Brown, B. F. Donahue, Philip Brady, T. A. Hill, A. W. Reynolds, T. J. McCormack, Wm. Kirchof, Thos. J. Toumey, M. J. O'Brien, Edw. J. Brady, Alex. Bryant, Thos. J. Cummins, Gen. Geo. D. Scott, John Byrns, John Mitchell, Thos. F. Gaynor, Jas. Gilroy, J. A. Rossman, Henry G. Gabay, Isaac J. Brown, John Renehan, P. J. Andrews, Edw. J. Riordan, Patrick Brady, Adam Huston, E. J. Renehan, Henry J. Pattison, I. O. Shumway, Thos. Martin, Jas. Smith, F. S. Cochran, Jr., Frank Reynolds, Louis H. Stroh, Jos. W. O'Brien, A. E. Jackson, Jos. T. Coyle, Thos. F. McCaul, Chas. Tucker, Samuel Klein, John W. Cooney, Jas. F. Kelley, John Toumey, Matthew F. Donahue, Chas. A. Walsh, Philip Smith, Wm. J. McDermott, Jas. O'Brien.
Buffalo, Chas. B. Huck, Frank L. Beyer, Chas. Criqui, Chas. Geiger, W. N. Martin, E. L. Cook, Edward Hurley, John J. Kavany, Wm. H. Craighill, H. J. Knepper.
Brooklyn, D. Donegan, E. McDonald, J. J. Nixon, E. Belford, W. Eiermann, T. E. O'Brien, S. J. Corcoran, Thos. Kelly, Thos. Radcliffe, M. F. Gleason, H. M. Noble, L. Gfroerer, J. S. Moyles, C. Schwenker, G. W. Smith, Wm. N. Brown.
Syracuse, W. L. Benedict, Chas. J. Dussing, Wm. B. Goldie, W. F. Gooley, T. P. Montgomery.
Utica, J. D. Batchelor, Chas. Trosset, W. T. Cantwell.
Troy, Martiu Mulligan, Wm. F. Quinn, Samuel Morris, Chas. Wills.

OHIO.

Dayton, R. B. Moodie.
Cleveland, Eb. Ellen, Theo. Poplowsky, John Leese, E. H. Benhoff, H. J. Luff, H. Ward Daykin, John Commerford, J. B. Couture, Chas. E. Armour, A. Lehman, Henry Mans, Louis C. Cooper, Frank C. Feller, Louis Poplowsky.
Akron, Henry P. Cahill.
Cincinnati, J. B. Laumann, Charles Homan, Martin Daly, Harry Feidkamp, Frank Niesen, Thos. Canary.
Mahoning Valley Association, Chas. F. Kist, W. H. Burnett.
Springfield, W. M. Mitchell, Chas. E. Ridenour.

PENNSYLVANIA.

Altoona, T. N. Baird, O. J. Pensly, H. E. O'Niel.
Erie, Geo. B. McIntire, Fred. L. Albracht, James Purcell.
Harrisburg, C. Nauss, J. Wisely Neill, Chas. Gilmer.
Lancaster, C. Will, Harry J. Fisher, D. H. Miller.
Philadelphia, Geo. F. Uber, Wm. S. Clark, R. J. Hoben, L. J. Sommers, R. H. Watson, Wm. Coach, Harry Boon, H. L. Righter, Chas. S. Warfield, S. Louis Barnes, J. McNally, E. H. Mackay, J. Gormly, Walter Jones, W. H. Doyle, J. E. Eyanson, R. J. McNally, A. M. Hicks, G. Crouse, Howard Smith, C. W. Groeling, J. Dwyer, I. T. Hirst, J. J. Harnett, D. D. Whealan, H. Neilson, D. V. Kennedy, D. R. Burns, F. P. Brown, Wm. Harkness, S. W. Barnes.
Pittsburgh, S. S. White, Hugh M. Hay, E. M. Tate, F. R. Marshall, W. J. Elkins, J. H. Keene, D. G. Deely, Robt. Henderson, J. K. McBride, F. J. Scheib, J. C. Godfrey, David Rogers, M. J. Counahan, W. B. Brindley, J. T. McShane, H. C. Gow, S. J. Sloan, E. A. Jenkins, J. H. Conrad, W. H. Williams.
Reading, F. Miller, W. O. Scull, S. E. Fritz, E. J. Cake.

RHODE ISLAND.

Woonsocket, J. F. Mulvey.
Newport, Maurice Butler, Michael F. Kelly.

TENNESSEE.

Knoxville, E. L. Dearing, J. A. Ahler.
Memphis, Lew Tisdale, Harris L. Browne, Edw. McGowan.

VIRGINIA.

Norfolk, C. L. Foster, W. H. Barnard.
Newport News, J. A. Vandegrift, J. W. Dozier.

WEST VIRGINIA.

Wheeling, Robert W. Kyle, Geo. W. Lotz, Frank T. Hare, Thos. A. Little.
Parkersburg, C. H. Turner.
Fairmont, F. D. Johns.

WISCONSIN.

Neenah, C. W. Nelson.
Racine, Hy. Raymond.
Madison, Geo. Kraft, Wm. Owens.
Milwaukee, W. H. Halsey, Chas. Polacheck, Hugo Lippert, Adolph Schwind, John Stemper, Philip H. Murphy, Wm. E. Goodman, Henry Dearsley, Chas. McNally, J. Schunk, Chas. Voelz, P. F. Kenney.

The convention then adjourned to meet at 2.30 o'clock.

TUESDAY AFTERNOON.

The convention was called to order at 3.45 o'clock by President Hornbrook, who asked for a volunteer reading clerk, and David Craig of Boston responded. After 50 names were called, a motion to accept as the roll call was lost after argument to the effect that it gave an opportunity to discover who accepted election as delegates for pleasure only and were delinquent in attending the meetings of the convention, and the roll call was completed.

The president, on motion, appointed the following Committee on Resolutions:

D. J. Hickey, Chicago.
James E. Britt, San Francisco.
C. W. Hobson, Lawrence, Mass.
Isaac J. Brown, New York.
Samuel W. Barnes, Philadelphia.

Resolutions.

Resolutions covering grounds as follows were then read and referred to the above committee:

An amendment to the by-laws making it necessary for the National Executive Committee to refer all changes made in the trade resolutions agreed upon at conferences with the supply trade to the local associations for ratification one month after conference, to make the agreement binding.

A resolution to substitute for the "Cleveland Resolutions" one to the effect that goods be purchased only from those manufacturers who refrain from selling goods to any but members of the association, to prevent the plumber from being placed in a false position who must charge more than the supply trade which sells to the consumer.

Owing to the failure to effect the substitution of the "Cleveland Resolutions" *Be it Resolved*, That the Executive Committee be instructed to take action to secure an agreement with the supply trade for the good of the whole trade in removing the constraint that now exists.

The presentation of resolutions was interrupted for the purpose of welcoming Mayor Franklin P. Stoy. Mayor Stoy extended to the important visitors a hearty welcome, and explained that a slight error caused the delay in his arrival at the convention, but assured the delegates that it gave him pleasure to extend to them the freedom of the city. President Hornbrook gracefully accepted the favor for the convention.

The presentation of resolutions was then resumed, as follows:

Resolved, That it is the sense of the convention that the national secretary be informed whenever a strike exists in any city, he to notify the trade, so that no journeyman from the strike center can secure work until he can give a satisfactory explanation from his former employer.

Resolved, That the convention approves of the "Cleveland Resolutions," and the following shall be a part: The plumbers shall be divided into two classes. Class A to be composed of members of the association, who shall buy supplies 20 per cent. lower than Class B, which shall include the nonmembers.

Recognizing that it is best for the trade when friendly relations exist between the plumbers and the journeymen, *Resolved*, That the convention recommends the appointment of conference committees in all local associations.

Report of Essay Committee.

The report of the Essay Committee was then presented and ordered printed in the proceedings of the convention. The report is as follows:

Your Committee on Essays regrets that its work of the year should fall so far short of the results which might have been attained if the members of the association were not inclined to leave to the members of this committee not only the suggestions for subjects of essays, but the production of the essays themselves.

Article XII of the by-laws is as follows:

> The Essay Committee shall consist of five members, whose duty it shall be to select subjects for the different local associations.

Soon after the announcement of the *personnel* of this committee your chairman made an attempt to get the opinions of its various members as to the outline of prospective work. Only two members (besides your chairman) responded, and later attempts toward the same end met with the same results. When the approaching close of our official year compelled some action by the three active members a circular letter was prepared, with suggestions of subjects as follows:

To Officers of Local and State Associations:

Will you kindly solicit from your membership short essays upon subjects of interest to the National Association? While not confining the writers to these, we would suggest as subjects the following:

1. Future of the master plumber.
2. The effect of trusts upon our trade (nonpartisan, from a business point of view).
3. Necessity of a more thorough organization of the trade.
4. How can our membership be increased?
5. How should the plumbing business be conducted to be most successful?
6. Is the present system of credits for the interest of the trade?
7. Why is subcontracting detrimental to the plumber?
8. Why is the publishing of net prices and discounts hurtful?
9. Is the present plan of organization of the National Association conducive to the best interests of all sections?

If you can assist our committee in securing something to present to the coming convention at Atlantic City you will greatly oblige the committee.

M. W. Manwaring. Chairman Essay Committee.

We accepted the offer of our watchful and diligent president to have these letters printed and circulated through the executive office. In order to give the greatest scope, contributors were allowed to select any subject, though certain subjects were suggested. It seems to your committee that this matter does not appear to meet with suitable responsive action from our members. There are a great many in our membership competent to make this department both interesting and beneficial. The helpfulness of an interchange of ideas cannot be overestimated; and some plan should be devised to cultivate this feature of our organization. Under present conditions it seems as though the members were apt to consider the preparation of such essays as the duty of the Essay Committee, and forget the support owed to them.

Your committee begs to suggest that the chairmanship of this division be made a part of the duties of the vice-president, and that the selection of the other members of the committee be left to him. We believe this change would result in the submission of essays on subjects along the line of policy of the executive boards, and therefore of great value to the association.

We respectfully submit the foregoing report, together with the accompanying essays and articles which have been forwarded to us.

M. W. Manwaring, Bridgeport, Conn.
F. Wernentin, Jr., Davenport, Iowa.
C. H. Avery, Nashua, N. H.

How Can Our Membership Be Increased?

BY WILLIAM F. QUINN, TROY, N. Y.

This is a subject (and at this time an important one) that should interest every member of this association. Upon the increase in membership during the coming year will depend in some measure the future welfare and prosperity of the association. From the report presented at the Baltimore convention by the financial secretary (June 12, 1900), and the report of President Tierney at the Kansas City convention of 1901, it would seem that the increase of membership should receive more attention from individual members than it has done in the past.

If the National Association of Master Plumbers is a good thing, and a benefit to its 6000 members, it ought to be just as good and just as beneficial to the 6000 members of the trade outside the association; and every possible effort ought to be made to bring this vast number of "way backs" into the fold. This can be done by making it known and felt in all parts of the country that a membership in the Master Plumbers' Association of the United States means dollars and cents in the individual members' pockets; and when he who is now outside the breastworks learns that when he has secured membership within our portals he can make better terms with those from whom he purchases his supplies he will lose no time in making his application—in fact, he will find it necessary to do so without delay. Once you get him inside the breastworks—once he attends a national convention of this association and meets with some of the brightest minds of the country—once let him associate with his fellow delegates and his fellow craftsmen—and you have an "organizer." And when you increase the membership by such means the additions will be constant and continual; and ere long, perhaps ere another national convention, our membership may be increased 50 per cent.

The Cleveland Resolutions, with the addition of such ways and means whereby some arrangement might be made with the supply associations to bring about such results—together with a hustler at the helm, as there has been during the past year, backed up by a conservative and brainy Executive Committee—such, in the judgment of the writer, will be the best answer to the question, "How can our membership be increased?"

How Should the Plumbing Business Be Conducted to Be Most Successful?

BY CHARLES H. HOBSON.

In order to discuss the question intelligently it will be necessary, perhaps, at the outset to agree upon a common definition as to what constitutes success. In the opinion of the great majority, success means the accumulation of money through large profits, or fair profits on a large business; but if carefully analyzed I think we must agree that the profits are rather the result of one element of success—thrift—and that it is possible to accumulate wealth in the business and be unsuccessful, or on the other hand to fail to secure wealth and yet be successful.

Those who have been engaged in the business 25 years or more have passed through the chrysalis stage which has transformed plumbing from a trade into a profession; and now that the change has come about and plumbing is a profession, it seems entirely fitting that the master plumber should become a sanitary engineer.

But changing the name does not alone effect the transformation. We must also acquire the added education necessary if we wish to make a success of our profession. The plumber of to-day relies on books and papers (inspired by men in other professions) to assist him; but the sanitary engineer of the future must be an authority on all matters of sewage, water supply and ventilation, he must have made a study of biology and bacteriology, and must be a student of the liberal arts and sciences. He should be essentially a business man and merchant; and as such he should individually—and collectively with his brothers in the profession—insist upon business methods in his transactions with those from whom he buys as well as those to whom he sells.

The material used in connection with the sanitary equipment of a house should be strong, durable and artistic, and to this end we should bend all our energies. There should be certain standards adopted by manufacturers and plumbers, which should be rigorously adhered to by members of our association. As far as possible there should be enacted State and national legislation toward the same end. Labor should be classified, and an effort made to have the labor unions co-operate with us for this purpose.

Every journeyman should have his certificate as a first or second or third class workman. The effect of this would be to give the purchaser just what he paid for, which I regret to say is not always the case at present, as oftentimes a second-class man is sent where a first-class price is charged. Honesty toward our customers is the chief element of success, and honesty to ourselves goes hand in hand with it. In the past there has been no business regarded by the public with greater distrust than ours. Ruinous competition, especially in contract work, has been a stumbling block in the pathway of success; it is responsible for nearly all the dishonesty and bad work and bankruptcy and distrust. This is one of the most difficult questions to deal with, but with thorough organization and educational talk relative thereto much good can be accomplished.

One step in this direction which would prove beneficial would be the adoption of local or district price-lists along conservative lines. Let such price-lists be published and distributed openly to customers, signed by all the local association members—and afterward discourage all contract work. The plumber should never lose sight of the fact that he is also a merchant, and he should keep a neat and tidy store and office. His shop windows should be bright and well lighted and contain samples of up to date goods, arranged in the most artistic manner; and as to the general stock, there should be a place for everything, and everything should be in its place.

One thing calculated to discourage underestimating would be for the plumber to keep a strict account of the cost of each contract, in order that he may be confronted by his losses, or in some few cases, perhaps, by his gains. In this connection let him keep an account of his expenses (or unproductive items) for one year, such as rent, fuel, light, teaming, freight, express, clerk hire, stationery and all the numerous little details attendant thereto; and if he has not already done so, let him compare the expenses with the total volume of his business, and he will find that when he figures a job on a basis of ten per cent. profit he has actually made no profit whatever (and perhaps even a loss), as the expense account will generally run nearer 15 than 10 per cent.

I have tried to touch upon what seemed to me the most essential points in the conduct of a successful business, and to touch on them as briefly as possible. There is doubtless much more which could be said, but if we initiate a campaign of education along these lines it will not be long before we should all see success, professional and financial.

An essay by T. C. Boyd was referred to the Committee on Resolutions, on account of the following recommendations contained therein:

Resolved, That the price-list of no manufacturer be used that is not subject to a discount of at least 50 per cent.

Resolved, That purchases of materials be confined to those houses which give credit only to those entitled to it, and preferably to those which confine their sales to our members.

The convention then adjourned to meet at 10 o'clock on Wednesday morning in executive session.

THURSDAY AFTERNOON.

After spending the whole day of Wednesday and Thursday morning in executive session the convention went into open session at 3.30 o'clock on Thursday afternoon. The report of the financial secretary, T. Cotter, showing receipts for the year amounting to $11,396, was referred to the following Auditing Committee appointed by the president: P. H. Callahan, E. C. Kelly and H. L. Brown. A paper on "Sanitary Conditions of New York City," by P. J. Andrews, Chief Inspector of Plumbing of New York City, was then read, and ordered printed in the proceedings. The report of Treasurer W. E. Goodman was read and showed the receipts for the year to be $18,334.44, and the expenses $8447.99, leaving a balance in hand of $9886.45. The report was referred to the Auditing Committee. The president then called L. Poplowsky to the chair.

A motion to rescind that portion of the by-laws which prohibits local associations from acting as wholesale dealers and supply houses was lost.

On motion, the secretary was ordered to inform local associations of the action of the convention in reference to catalogues and price-lists.

On motion, a special committee was ordered to be appointed to draft suitable resolutions on the death of ex-President Samuel L. Malcolm.

Election of Officers.

On taking up the election of officers, W. H. Doyle expressed the opinion that it would be best to tie to the old customs in elections and nominated for president Charles A. Polacheck, whose name was received with applause.

Charles A. Polacheck then nominated for re-election President E. D. Hornbrook, whose name was greeted with cheers and applause.

On motion, the secretary was instructed to cast one ballot for the unanimous election of E. D. Hornbrook. Frank J. Reynolds and J. B. Collins were appointed tellers, and on announcing the election of E. D. Hornbrook for president the cheers lasted two minutes.

The newly elected president was warmly greeted, and in accepting the office closed his remarks with the statement that the "Cleveland Resolutions" could be of the greatest service if the members were loyal. He also assured the convention that to be re-elected president of the association gave him the proudest moment of his life.

Charles B. Huck, in a very earnest speech, nominated for the office of vice-president Charles A. Polacheck, which nomination was received with great applause. The secretary was instructed to cast the ballot of the association for Charles A. Polacheck for vice-president. The announcement of his election was greeted with prolonged cheering until he was presented to the convention by President Hornbrook. Mr. Polacheck, in accepting, said he was delighted that the re-election of E. D. Hornbrook had been accomplished, and that it was no small honor to be re-elected to the second highest office in the gift of the association. He also spoke of the great service rendered by the plumber to the welfare of the whole public.

John L. E. Firmin placed in nomination for the treasurership the name of William E. Goodman, who, after some applause and much eulogy, was duly elected.

The president announced the appointment of Timothy Cotter as secretary, which was indorsed by the convention.

The president then announced the appointment of the following committee to prepare resolutions on the death of ex-President Samuel L. Malcolm: Chairman, John L. E. Firmin, A. H. Brown, W. H. Doyle, D. G. Finnerty and Charles H. Byrne.

California to Have the Next Convention.

After a number of speeches in eulogy of Mr. Malcolm, telegrams and letters were read from several cities inviting the association to honor them with the next convention. California was strong in its invitation, several cities supporting it. Invitations were also received from New Orleans; Put-in-Bay Island, Lake Erie, Ohio; Memphis, Tenn., and Atlantic City, N. J. After a thorough exploitation of the many attractions of each of the places mentioned the invitation of San Francisco was, on motion, accepted.

Executive Committee.

The Auditing Committee reported the books of the association to be correct.

The president then announced the appointment of the following Executive Committee:

T. F. Gaynor, New York.
T. J. Young, Mobile, Ala.
P. Tierney, Providence.
George Kirkhoff, Indianapolis.
L. Poplowsky, Cleveland.
W. B. Coffey, Portland.
C. C. Breyer, Chicago.
Jos. A. Weldon, Pittsburgh.
Fred. Fox, Jr., Chattanooga.
J. J. Foy, St. Louis.
David Craig, Boston.

The usual votes of thanks were then given, and the convention adjourned.

CHIPS FROM THE SHAVE HOOK.

The meetings were held on the Steel Pier in the Auditorium, and in order that the delegates and their friends should have free acess a magic mirror was furnished them, which had a celluloid back bearing the motto of the association, "They Builded Better Than They Knew," and the date, "1883," when the N. A. M. P. was instituted.

* * *

It is Lawyer Crosby now; so look out how you badger the executive clerk.

* * *

McCoach had a room on the same hall as your scribe, and he sang loudly if not sweetly at whatever hour he came down the hall to retire.

* * *

Ex-Presidents W. H. Doyle, Jeremiah Sheehan, Daniel Finnerty, P. Tierney and President Hornbrook all expressed regret over the recent demise of ex-President Samuel L. Malcolm.

* * *

The John Simmons Company of New York had a fine exhibit of fire department supplies, such as plumbers are now installing in modern buildings. It was in charge of Howard Walton.

* * *

The Kennedy Valve Company of New York were represented by M. J. Brosnan, who talked of valves, hydrants and automatic sprinkler equipment.

* * *

Murray G. Millikin was the advance agent for the H. Mueller Mfg. Company of Decatur, Ill. He was followed by Fred. B. Mueller, Philip Mueller and W. L. Heinrichs, who made a fine showing of brass goods and specialties. They were popular, notwithstanding that they caned most of their visitors.

* * *

The merits of the Lamb & Ritchie, Cambridgeport, Mass., tin lined and lead lined iron pipe were made clear by Albert P. Briggs, who also showed a picture of the medal awarded this firm at the Pan-American.

* * *

Thomas K. Peters of the Steam Appliance Supply Company of St. Louis showed a new chain pipe wrench that the house are about to put on the market.

* * *

John W. Cooney of New York was interviewed by many who are interested in his methods of doing a big job quickly.

* * *

M. A. Daly of the Noppel Pump Company of Hartford, Conn., found many interested in his special appliance for testing systems and removing obstructions from waste and service pipes.

* * *

Charles V. Daiger, H. J. Stanscombe and V. C. Doyle made a display of gas fixtures that attracted much attention to the products of the Lawrence Gas Fixture Company of Philadelphia. Prince Henry mirrors and celluloid memorandum tablets were their souvenirs.

* * *

Henry Sieben represented the Sieben Mfg. & Supply Company of Kansas City, Mo., as only he can. He had a fine display of the Sieben traps and specialties made by the company, who have recently increased their capital and equipment so as to meet promptly the growing demand for these goods.

* * *

I. N. Glauber and Alex. Buchman of the Glauber Mfg. Company of Cleveland, Ohio, had a fine display in Parlor 37 of the antiques and curios gathered while they were in Europe. They gave to their visitors a paper weight in the form of a bronze frog.

* * *

Thomas Kelly of Chicago wore the oldest badge that was shown at the convention. It was of the vintage of 1883.

* * *

So many showed an interest in the variety of asbestos pipe coverings and insulating materials made by the H. W. Johns-Manville Company of New York that Manager T. T. Lyman stayed through the convention, assisted by George F. Gilbert, sometimes called " Sam," who has no pipe dreams but pipe insulation adapted for any purpose. Visit Mr. Lyman or send for " Sam " and " Sam-pulls."

* * *

H. E. Speakman did the honors and W. A. Speakman did the work for the Speakman Supply & Pipe Company of Wilmington, Del. They have a new ventilated urinal that presents attractions to those who study the sanitary side of plumbing fixtures. The company's circulars, which come in a set, show it up nicely.

* * *

Mustee Brothers of 204 Cedar avenue, Cleveland, Ohio, showed their new Marvel gas hot water heater, which presents a large amount of surface and looks like an effective heater. It is constructed with a view to durability. They gave out a circular that explained its many excellent features, including long water travel and large surface.

* * *

C. Theo. Campbell presented his cards from the New York office of the W. H. Page Boiler Company and proved an able assistant to N. E. Frost.

* * *

The Duplex testing plug, invented and shown by August T. Pflugh for the New Jersey Plumbing Specialties Company of 106 Adams street, Hoboken, is made of malleable iron, provided with the best rubber gaskets, and adapted for all sizes of pipe from 2 to 6 inch.

* * *

" It is not so much that these bibs are something, but rather that they are something better " is the way a bib circular opens up that the boys from the H. Mueller Mfg. Company of Decatur, Ill., presented at their exhibit of fine brass goods in the Grotto.

* * *

W. E. Delehanty showed for Peck Bros. & Company of New Haven, Conn., the Peck's Universal sanitary closet connection, in which asbestos is used instead of putty or rubber. The practical men thought well of it, and took one of their booklets describing the device. All the Yankees asked, " Where's Steve Baker? "

* * *

A. D. Fiske Adams cracked up Alberene stone for all sanitary uses, and incidentally mentioned sinks and laundry trays for the Alberene Stone Company of 393 Pearl street, New York.

* * *

Emmett Martine of Fort Wayne, Ind., showed miniature cellar traps that prevent trouble from back water and have many other virtues.

* * *

The W. S. Cooper Brass Works of Philadelphia, Pa., were ably represented by F. S. Merwin, who is prepared to place orders for anything needed for the most luxurious Atlantic City hotel or any other kind of a building.

* * *

A. C. Langston, the Southern representative of Jenkins Brothers of New York, came up from Atlanta, Ga., to the Southern Hardware Jobbers' Convention at the Marlborough, and ran up the board walk to see Le Compte & Webber, who were still at Parlor G dispensing hospitality to the delegates.

* * *

W. H. Crookston of 185 Wooster street, New York, said little about the Acme pipe joint cement and plumbers' supplies, but enjoyed meeting his many friends in the plumbing trade.

* * *

James J. Lawler had Room 328, where he entertained his guests with talks on the specialties made by the Lawler Water Feed & Damper Regulator Company of 181 Mercer street, New York.

* * *

The neat pocketbooks presented in the interest of the Monarch Sunshine boilers, made by Orr, Painter & Co., Reading, Pa., enhanced the popularity of the house and the man who handed them out.

* * *

W. H. Switzer, vice-president of the Utica Heater Company of Utica, N. Y., was ever present. He knew the delegates from every section, and developed quite an interest in the Imperial Sectional, Auburn and New Keystone boilers, the points of which were fully explained by him.

* * *

Harry S. Martin of the United States Radiator Company of Dunkirk, N. Y.; M. E. Danforth of Washington, and W. S. Appleton of the New York office sowed good seed for the extensive line of radiators made by the company.

* * *

The No. 1 Mercer boilers and the Wall radiator exhibted by the H. B. Smith Company of Westfield, Mass., received as much attention from the plumbers as from the steam fitters and engineers when explained as it only can be by J. C. Faulkner.

* * *

The Pierce, Butler & Pierce Mfg. Company of Syracuse, N. Y., left the plumbers to the attention of W. H. Peterson and W. B. W. Bryan of the Philadelphia office, and the prestige of the American and Florida boilers was pleasantly extended.

* * *

C. V. Haynes of the Philadelphia office of the American Radiator Company assisted George Downe of Chicago in bringing the Ideal boilers and American radiators to the attention of the plumbers.

* * *

Thomas N. Chalfant of the Vapor Steam Heating Company of Philadelphia found many eager for information about their new method of heating buildings.

* * *

E. E. McNair of the Niagara Radiator Company of Buffalo, N. Y., brought many plumbers down to see the fine show of radiators he had in the Grotto.

* * *

A convenient tape measure in a celluloid case distributed at the close of the convention at the Auditorium by Jas. B. Clow & Sons caused quite a struggle to secure the coveted souvenir.

* * *

R. O. Kriebel of the United States Heater Company of Detroit talked Capitol and Mascot boilers to the plumbers.

HO! FOR CALIFORNIA.

One of the most enjoyable features of the convention was the trip to California by stereopticon given on Tuesday evening at the Rudolf by William McMurray, agent of the Information Bureau of the General Passenger Department of the Southern Pacific Company. Mr. McMurray and J. T. Hendricks of the Philadelphia office of the Union Pacific Company left nothing undone that might lead to the selection of California as the place for holding the next convention. The fine exhibition of photographs of California scenery and the handsomely illustrated literature distributed during the daytime only needed the trip to California by means of 200 colored lantern slides to increase the number of supporters already favorable to a California convention. The ladies were particularly earnest in their efforts to that end. J. D. McCann, of the Missouri Pacific Railroad Company, who has had charge of the New York plumbers in many of their railroad trips, was a popular railroad man, and lent his assistance to the efforts of

Messrs. McMurray and Hendricks. "Joe" promises the best the road affords, if the plumbers travel to the Land of the Sunset.

At 4 o'clock on Thursday afternoon the California organization had rolling chairs at the Rudolf, and the ladies were taken up the board walk to the inlet and then to the convention hall, where the selection of a place for holding the next convention was being considered. A. M. Longacre of the Southern Pacific Company came down from Philadelphia in time to lend his assistance to the successful efforts of the Pacific Coast advocates.

CALIFORNIA COURTESIES.

As a sample of the courtesies that are customary in California a case of the best wine and cigars the State produces was sent to President Hornbrook and the members of the Executive Committee. Its value as a souvenir, was highly esteemed, and after the officers had been duly remembered, the president delegated to Mrs. Hornbrook the disposition of the remainder. We are pleased to acknowledge the gracious compliment bestowed upon *The Metal Worker* in being the recipient of a bottle of combined California and Kansas City courtesy.

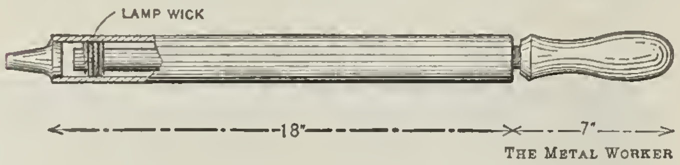
THE TRADE PRESS.

The *personnel* of the scribes changed somewhat at the plumbers' convention, although the exchange of courtesies continued. James M. Heatherton, A. A. Ainsworth and Phil Kearny labored for the *Plumbers' Trade Journal*, H. T. Sheriff, E. Winslow and C. H. Turner for *Domestic Engineering* and H. D. Carter for the *Engineering Review*, H. A. Smith having retired in his favor, and left the quill drivers in charge of Frank K. Chew of *The Metal Worker*. Copies of the respective journals and the daily convention issue of the *Plumbers' Trade Journal* were distributed where the plumbers could readily find them, and were as quickly gathered up by the men and the women alike. The press appreciates this tribute to its merit.

A MOME-MADE FORCE PUMP.

BY D. F. N.

Every plumber located in a residence section frequently has occasion to use a good substantial force pump for removing the stoppages from basins and waste pipes. Such a pump can be made with very little expense, and if a plumber finds himself without one and in strong need of it, it can be quickly made up. All that is required is a piece of 1½-inch tubing used for flush pipes. The tubing should be about 18 inches long, or of such length as can be had from what is left over in fitting up a new closet. This will make the chamber. Then an old thimble from a wash tray can be soldered on the lower end of the chamber. The plunger should be made of a piece of round oak or ash, with a handle at the top extending about 7 inches beyond the end of the chamber. Around the lower end a recess should be cut about ½ inch wide and ⅛ inch deep, to be filled in with twine or lamp wick, to make it fit the chamber tight. If the nose of this is put into a stopped up waste or service pipe and the chamber filled with water a considerable force can be developed to dislodge the stoppage. On the other hand, a very strong suction can also be brought into effect. Such a pump is also very handy for absorbing the water from holes around a drain pipe while making calked joints, or for freeing a main where water collects.



A Home Made Force Pump.

Imperial and Keystone Boilers.

The Utica Heating Company, Utica, N. Y., have issued a price-list of Imperial and Imperial-Keystone steam and hot water heaters, which they manufacture in many sizes. In addition to prices, a table gives dimensions and capacities of the various sizes, all arranged in a way to be of the most value to the dealer. Accompanying the price-list is a four-page folder, illustrating and describing the Imperial sectional steam and hot water boilers, in which the makers claim to have embodied several new features. The water surface is so formed and placed as to utilize in an economical manner the intense heat generated from the products of combustion. The spaces between the overhanging surfaces form a large gas chamber, in which it is stated the gases are thoroughly consumed, and the sections are so arranged as to give a return flue construction. Another point is the provision for positive internal circulation. The boilers have nipple connection, and are constructed on the popular "low down" principle, with no headers at the top or sides. The grate has bars so connected that they form two sections working independently of the other. In case of necessity, the grate bars can easily be taken out by removing one or two of the hand hole covers on the side near the bottom of the boiler; then after drawing out the keys the grate bar will fall down, and can easily be removed through the ash pit door. The circular also calls attention to the Keystone boilers for steam and hot water, which have large fire and grate surfaces with a small amount of fuel surface.

New York City Notes.

Trade in the jobbing and overhauling line still continues quiet for this time of the year, private overhauling being especially slack, while owners of tenements are not doing anything, except necessary repairs, as they are waiting to hear from the Tenement House Board.

⁂

The journeymen plumbers are involved in a dispute with the journeymen steam fitters as to which union should install pneumatic pipes. This is a knotty question to solve, but as plumbers install air or vent pipes, their work would seem to come nearest to pneumatic work.

⁂

The master plumbers in both Queens and Richmond are complaining about unlicensed plumbers being allowed to carry on the business, and have their work passed by the various departments; also that many of these unlicensed plumbers are allowed to use the name of a licensed plumber in getting out permits. The question has been taken up by the Greater New York Association and some relief is soon expected.

⁂

W. H. Spelman & Co. are doing two fine stable jobs for Col. J. F. Corkerill of Speedway fame; one on St. Nicholas avenue near 141st street for his horses and the other at 308 West Sixty-eighth street, to be used principally for automobiles.

⁂

East side building is in the best condition of any section of the city just now. Samuel Greenwald has a tenement at 709 and 711 East Sixth street, another at 31 and 33 Market street, as well as one uptown at 119th street near Madison avenue. Richard Tretler has a tenement at 206 and 208 East Seventeenth street and Jacob Nordinger has three tenements at 419 to 423 East Twenty-fourth street.

⁂

The new Grand Theatre, to be erected at Grand and Chrystie streets, is to be one of the features of that part of the city. The plans for the plumbing are out and many of the plumbers around there are sharpening their pencils to get the job.

The Wellington Mfg. Company, makers of Lamps and Gasoline Torches, after being located at 468 Cherry street, New York, for 17 years, have removed to 18 and 20 Oak street.

FOURTEENTH ANNUAL CONVENTION OF THE NATIONAL ASSOCIATION OF MASTER STEAM AND HOT WATER FITTERS.

(Continued.)

FRIDAY MORNING.

The convention opened in executive session at the Hotel Rudolf and continued until adjournment. The Committee on Grievances sat in Parlor J and held a number of hearings. All the grievances were adjusted before they rose to enter the convention hall with their report.

FRIDAY AFTERNOON.

The convention opened in executive session, but went into open session for the election and installation of the new officers, whose names were given in our report last week. Enoch Rutzler presented his usual long list of motions covering all matters that had not been attended to, thanking the retiring officers and asking that any matter he had overlooked be brought to the attention of the convention for action.

The newly elected president, A. E. Kenrick, in his address of acceptance, alluded to having served on the Credential Committee as chairman since 1890, and assured the members that there would be a new chairman next year. Mr. Kenrick, who is also president of the American Society of Heating and Ventilating Engineers, extended an invitation to all to attend the meeting of that society.

On Saturday a short session was held for the transaction of purely routine business.

"FITTINGS."

A telegram brought T. Howell Johnson down to represent the Thatcher line of steam and hot water heaters, made by the Thatcher Furnace Company, 240 Water street, New York. Mr. Johnson covers a large territory. He found many of the delegates were old acquaintances.

* * *

L. G. McCrum came on from Uniontown, Pa., to say a word for the line of steam and hot water radiators made by the Uniontown Acme Radiator Company.

* * *

Clarence V. Kellogg of the Federal Boiler & Supply Company, 88 Centre street, New York, had Henry Adams as a bodyguard and gave a cordial greeting to Eastern and Western men alike.

* * *

Edward Gurney and W. T. Isaacs of Boston, George Rinkenberger of New York and Fred. Miller of Philadelphia represented the Gurney Heater Mfg. Company and had a Bright Idea for every fitter at the convention.

* * *

W. M. Mackay showed a section of one of the new radiators that the New York Radiator Company of Utica, N. Y., are putting on the market. He also had something to say about the Royal boilers made by the Hart & Crouse Company of Utica, and invited a further investigation of them at his headquarters, 235 Water street, New York.

* * *

Don J. Powers of Chicago and D. E. McCallum of New York, of the Powers Regulator Company, Chicago, got in early and renewed old acquaintances, while securing allegiance to the Powers system of temperature regulation.

* * *

Thomas H. Williams of the A. A. Griffing Iron Company, Jersey City, N. J., left W. M. Cosgrove and A. S. Mappet to do all the work for the Bundy line, for it was his first visit to Atlantic City and he wanted to see the board walk and its attractions.

* * *

Warren Webster and Theodore Webster of the Warren Webster Company, Camden, N. J., helped J. H. Davis in acquainting many interested steam fitters with the Webster system of exhaust steam heating and the Webster specialties. C. P. Vandeveer came down from New York to represent that section, and "Van" fills the bill.

* * *

W. K. Pierce of the Pierce, Butler & Pierce Mfg. Company, Syracuse, N. Y., was too busy enjoying himself to say much about a new catalogue full of new boilers that the house have gotten out.

* * *

The J. L. Mott Iron Works, New York, and the Sunray boilers and radiators had able champions in J. J. Blackmore and Capt. B. N. Hurd.

* * *

Frank C. McLain, New York, had boilers, radiators and specialties to sell and found time for business between the social chats.

* * *

Harry Hellerman called attention to the specialties for steam fitters made by the Penn Engineering Company, Philadelphia.

* * *

Tom Fleming talked "Richmond" as only he can, and the new Richmond boiler and the new Richmond Company of Norwich, Conn., lost no prestige from his discourses.

* * *

The McClave stokers, grates and blowers made by the McClave-Brooks Company of Scranton, Pa., were presented to the attention of the steam fitters by Sanford C. Smith.

* * *

The H. W. Johns-Manville Company were represented by George F. Gilbert of the New York office and Thomas J. S. Nicely from Philadelphia, in whose hands pipe covering got a lift.

* * *

"Use Stillson Wrenches" was the suggestion on a neat souvenir presented by George T. Coppins of the Walworth Mfg. Company of Boston, Mass., to the steam fitters. It was a seal leather pocket with a tablet of paper on the front and a pencil in a socket on one end; first rate for making memoranda. As was anticipated, the ladies appropriated these little conveniences, so Mr. Coppins gave the men a cigar perforator bearing the same suggestion.

* * *

Howard Wright Walton came from 110 Centre street, New York, to push the iron pipe fittings and valves of the Diamond S brand that are supplied by the John Simmonds Company. "Just put it down, and here is a pencil with which to do it, that our house can send you promptly anything a steam fitter ever needs."

* * *

Frank G. English, manager of the Philadelphia office of the J. H. McLain Company of Canton, Ohio, cracked up the better facilities enjoyed in the new quarters at 43 North Seventh street, where he is now located with the College line of steam and hot water heaters.

* * *

The various specialties for steam plants made by the G. M. Davis Regulator Company of Chicago, and particularly their regulators, gained prestige through the explanations of W. R. Moore, manager of the company's New York office at 123 Liberty street.

* * *

S. H. Beard, manager of the heating department of Orr, Painter & Co., Reading, Pa., renewed his acquaintance with the trade and conversed about the boilers made at the Sunshine shop.

* * *

J. J. Wilson, 927 North Forty-eighth street, Philadelphia, was down in the interest of Our Own boilers made by the Novelty Iron Works of Canton, Ohio.

* * *

Mrs. Stewart A. Jellett has a son who is like George Washington in that he fell out with a cherry tree. Unlike George, however, he was pretty severely bruised by the fall, but is doing well.

* * *

W. H. Peterson and W. B. W. Bryan came over from the Philadelphia office to re-enforce W. K. Pierce in doing the honors for the Pierce, Butler & Pierce Mfg.

Company of Syracuse, N. Y. New boilers, new catalogue and old favorites. They showed photographs of the new 900 Series American boilers with 41-inch grates, also photographs of the new one, two, three and four column Lorraine radiator and prime surface indirect radiator.

* * *

J. Dearborn Stiles of Jenkins Bros. telegraphed his congratulations to the convention and regretted his inability to attend.

* * *

The ladies went in one charming line in push chairs to Young's Pier to see the fishermen haul in their net. It was just one of A. B. Jenkins' arrangements for their pleasure. On their return, Charlie Webber had a box of "Huyler's" in each of their rooms; another of the favors of Mr. Jenkins.

* * *

Frank C. Eckfeldt, manager of the Model Heating Company of Philadelphia, and H. Addams enjoyed greeting the steam fitters, many of whom use the Model boilers.

* * *

H. T. Giblin and Mrs. Giblin enjoyed the visit to the shore, even though Mr. Giblin gave considerable time to boiler matters.

* * *

The Vapor Heating Company of York, Pa., and Philadelphia was represented by Thomas Chalfant and E. E. Hershey, who report a growing interest in their fuel saving and efficient system of heating.

* * *

A. B. Marshall of the Boynton Furnace Company, New York, mingled with the crowd in the reception hall and incidentally talked boilers—Boynton boilers.

* * *

J. H. Waters of the National Radiator Company of Johnstown, Pa., was freely welcomed on every hand, and the company's latest radiators received attention.

* * *

M. B. Moore of the Pennington Foundry & Heater Company of Pennington, N. J., gave interesting information about the company's new sizes of boilers, the extension to their plant and their facilities for prompt shipment.

* * *

The Armstrong Stove Company, Baltimore, Md., were represented by W. M. Sardou.

* * *

L. P. Monash made the Monash-Younker Company of Chicago more popular than ever by presenting to the visitors a coin purse. In the purse was a slip saying: "We take great pleasure in presenting this little purse with our compliments and trust that it may never be empty. P. S.—We shall be glad to learn that it reached you in good condition." The name of the company was on the purse in gilt letters, with the suggestion that the Perfected Duplex No. 6 automatic air valves be used on ordinary jobs and the No. 7 vacuum air valves on vacuum systems.

* * *

James A. Trane gave an exhibition of apparatus made by the James A. Trane Vacuum Heating Company, 40 Dearborn street, Chicago, showing the mercury seal, the Allen air valve and the Trane packless radiator valve used on this system of heating. As it was an exhibition in actual operation, it received interested attention from the steam fitters. Get a new catalogue?

* * *

The Norwall Mfg. Company of 40 Dearborn street, Chicago, who make the Allen Automatic air valve, were represented by E. P. Allen, who showed the valve in operation. It has a sealed metal float, needs no adjustment, has a nickel noncorrosive and nonsticking seat, is very sensitive in operation and is made for both low pressure and vacuum systems.

* * *

Robert Hoy was down from Royersford, Pa., in the interests of Floyd Wells & Co. and their line of heating apparatus.

A. J. Wright and Maxwell Gilbert were the rear guard of the Model Heating Company of Philadelphia, coming down on Saturday.

* * *

C. W. Woodward, secretary of the National Committee of the Confederated Supply Associations, was in attendance on the Conference Committee, but had time to renew many old acquaintances.

THE CONFERENCE.

The trade deliberations of Friday at Atlantic City were given additional importance by the conference between the committees representing the plumbers and the supply trade. The National Association of Master Plumbers was represented by President E. D. Hornbrook, Vice-President Charles Polacheck, ex-President P. Tierney and Executive Committeemen T. F. Gaynor, T. J. Young and Fred. Fox, Jr. The National Committee of the Confederated Supply Associations was represented by Frank J. Knox, William H. Haines, J. B. Rahm and G. H. Merkel. Three sittings were held, and the conference lasted until late in the evening.

All the differences existing between the two interests were discussed with the earnestness that their importance warranted and much information was brought to light that will receive due consideration by both bodies. The conference was marked by a manifest desire to get at the bottom facts and to meet fairly all the points raised. Each body seemed desirous of reaching some method of removing the constraint that now exists and of reaching some common ground of agreement. Although no final agreement was reached, the fact that there is no reluctance on the part of either party to meet in conference augurs well for the bringing about of better relations. While nothing in regard to the deliberations was made public, it was ascertained that interesting facts were discovered which, with the generous disposition shown in both associations, seem certain to have a beneficial effect, whether a new agreement is reached or not. Even if this much only is gained, the advantages to be secured by such conferences have been demonstrated and it is to be hoped that harmony will eventually be restored to this branch of trade.

Catalogue of Radiators and Heaters.

The abridged catalogue of radiators and heaters for steam or water sent out by the J. L. Mott Iron Works, 84 to 90 Beekman street, New York City, contains a great deal of information of interest to the heating engineer and contractor. A varied line of goods occupies the pages, the styles and sizes being such as to meet every reasonable requirement. In water heaters the range in capacity is from 100 square feet of radiation to 10,000 square feet in single units, while by arranging a battery of two or more units sufficient capacity for any purpose may be obtained. In steam boilers the sizes range in capacity from 300 square feet to 6000 square feet in single units, and any increased capacity may be secured by connecting two or more.

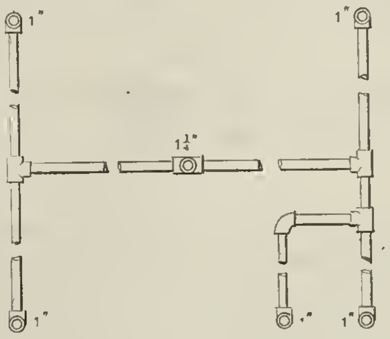
The company call attention to the fact that one of the important features of their boiler construction is the system of movable flue plates, which may be adjusted to suit the chimney draft. The sections of the boilers are separated to allow the fire and heated gas to come into contact with the heating surface of the boilers, the space between sections being 2 inches in the smaller sizes and 3 inches in the larger. The heater and radiator sections are connected by smooth or push nipples, the company pointing out that the difference between the expanded joint and the push nipple joint is that one is pressed out while the other is squeezed in. The company state that their radiator factory at Pittsburgh has been greatly enlarged and its capacity very much increased to meet the demands of their trade.

George R. Estabrook has been given the contract for heating the new block that is being put up in Springfield, Mass., by H. W. Van Allen.

APARTMENT HOUSE WATER SUPPLY.

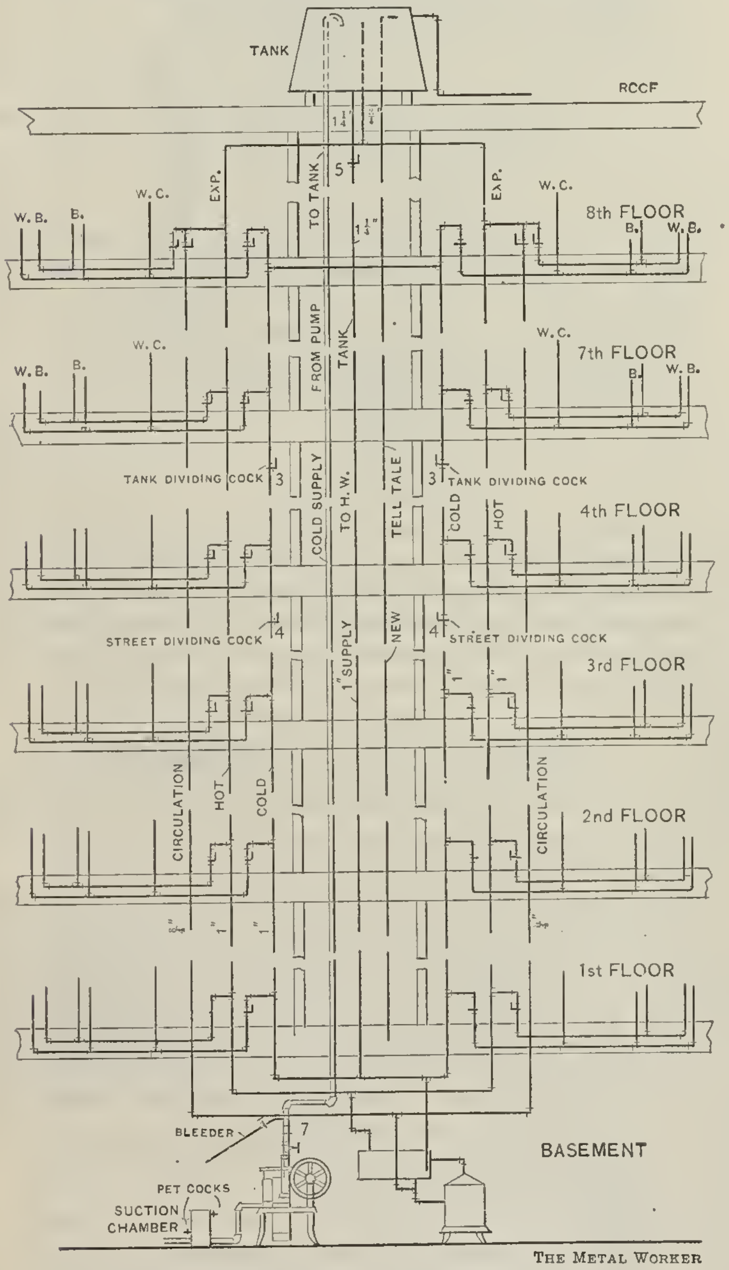
BY D. F. N.

For more than a year past in a large apartment house in the upper part of New York City a great deal of trouble has been experienced with the water supply system of the building, which is eight stories in hight. The water service system was arranged to be supplied from both the street main and a 1500-gallon tank on the roof. From this tank a 1¼-inch falling main dropped to the eighth floor ceiling, at which point it was connected with the distributing lines running across the floor beams and arranged in the shape of the letter H, as shown in Fig. 1, 1-inch falling mains dropping from each branch to supply the kitchens and bathrooms, which were immediately above one another. All these 1-inch falling mains were provided with valves between the fourth and fifth floors, as shown in Fig. 2, which is an elevation showing the piping system. The fixtures on the floors above these valves were supplied with water from the tank, while the fixtures on the lower floors were supplied from the street mains. A 1-inch distributing main heater from the street supply was arranged on the basement ceiling in the same manner as that used on the eighth floor, as shown in Fig. 1, and was connected with the falling mains on the fifth floor, where the valves were located. A 1-inch branch from the street main supply was carried to the hot water storage tank, and a 1-inch branch from the tank supply was connected with the street supply to the hot water storage tank. In order to secure hot water on opening a faucet at any of the fixtures, a circulating pipe was carried back from the hot water riser at the top of the eighth floor and connected with the hot water storage tank, as shown in Fig. 3.



The Metal Worker

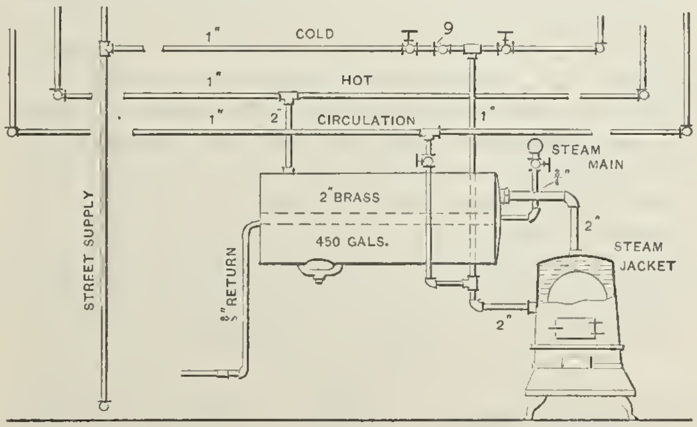
Apartment House Water Supply.—Fig. 1.—Water Supply Header.



The Metal Worker

Fig. 2.—Elevation Showing Piping and Valves.

This describes the condition of the piping as originally arranged. Now to get at the trouble. A plumber who was called in from a nearby shop to examine the piping system from the basement to the roof came across a dip in the hot and cold water supplies on the eighth floor in the boiler rooms, which rose up through the floor in order that the stop cocks connected with them might be accessible. These supplies were turned down again after connecting with the stop cock and pass under the floor, forming a sort of a pocket, or air trap, in the pipe. These pockets he claimed held air or dirt from the tank, as the engineer informed him that the tank was only quarter full while the examination was being made, but that as soon as the tank became filled a small supply of water would flow from the faucets on the eighth floor. The engineer, who was a dusky individual and very "chesty," told the plumber to return to his shop, as he would take care of the rest of the otherwise complete job himself by forcing the obstruction in the pocket in the pipes. After the engineer had put in several hours on several different days, he came to the conclusion that he was not any better off, and to his dismay one of the tenants on the eighth floor made a complaint to the owner that the water furnished by the tank was not pumped regularly, while the other tenants claimed that the pump worked overtime and kept them awake, which doubtless made the owner think of the fuel bill.



The Metal Worker

Fig. 3.—Hot Water Supply Connections.

To overcome the trouble another plumber was called in, who started to gather a little more information and to learn if there was a good head of water on the eighth floor. Some claimed that there was. The next question was whether the tank was filled at night as the result of the street pressure. Some of the tenants answered in the affirmative, but the engineer claimed that the tank was dry. Another alteration which the engineer had made to save the loss of water was the cutting off of the handles on the stop cocks on the fourth floor, so that the tenants could not operate them, and these cocks were left turned off continually. The plumber explained the trouble as being due to realizing no benefit from the street water supply. No benefit was derived from the street water supply on the upper floor during the night. As the piping was arranged it was necessary to work the pump double time, which trouble was still further increased by the location of the check valve, No. 9 in Fig. 3, on the cold water supply to the hot water service tank, which prevented the water from the street main entering this tank.

In order to prove the correctness of his opinion the stop cock on the street supply to the storage tank was shut down over night. The next morning the tank on the roof had an abundance of water and there was plenty of hot water on the eighth floor. On examination of the check valve it was found that it had been strained and would not fall into its seat without slight force, so it had allowed water to leak from the house tank back into the street supply system. The old check valve was removed and a new 1-inch horizontal swing check valve was put in its place. As soon as this bad feature of the system was removed no further trouble was experienced. A ½-inch leader was taken from the pump pipe above the check valve, No. 7, Fig. 2, so that the pipe could be emptied after the tank was filled, thus preventing freezing at the upper end. On the suction line to the house pump one 24 x 10 inch suction chamber was placed, to give the pump a body of water to draw from and to prevent the pump from drawing air into the system through the ball cock on the flush tank in the engineer's water closet. Another alteration was to put in a new telltale pipe from the roof tank to the sink in the basement.

The dusky engineer had a rather original way of telling when the tank was full. His telltale was to pump into the tank until it overflowed on the roof; then when he could see the water running down the leader trap in the basement, from which he removed the cover, he was sure that the tank was full. This gives some idea of the expense borne by those who employ the cheapest plumber, who gets a profit, if possible, whether the owner gets a profitable apparatus or not. A little increase in the first cost would have secured a properly arranged piping system with all the necessary valves, &c., for its proper use and a valve board giving explanation of their use. Men who work too cheaply do not include these conveniences in their job. In many instances, as in this, coal is bought regularly to overcome defects that good business judgment would have avoided by employing a competent contractor at a price that would insure an economical and effective system.

Newark Master Plumbers' Annual Outing.

The time having arrived to make preparations for the annual clambake and outing of the Master Plumbers' Association of Newark, N. J., the Committee of Arrangements, composed of A. Selden Walker, chairman; Ira Budd, F. J. Sturn, William Jacobi, E. A. Bleything and Edward M. Stirling, announce that this year they have again made arrangements with Host Wardell to entertain them at his popular resort, Port au Peck, on Pleasure Bay, on Wednesday, July 23. A special train will leave the New Jersey Central Railroad station, Broad street, Newark, at 9 o'clock sharp, connecting with the Sandy Hook boat leaving Rector street, New York, at 10 o'clock. The party will return from Long Branch on a special train. Tickets can be procured from the committee or from any of the members of the Newark Master Plumbers' Association at the price of $5 each.

The Galva Steam and Hot Water Boiler.

In a neat little folder issued by the Mulford Heater Company, Galva, Ill., attention is called to their latest improved boiler made under the name Galva and adapted for both steam and hot water. We are advised that the company are making their No. 55 boiler with 26-inch or 30-inch grate, as may be desired, although they point out that the 26-inch grate is most suitable for hard coal. The construction of the new Galva is such that the products of combustion after passing up through the water arm ring sections come out in front between the top arm ring and the dome sections, thence down to the diving flues, around the vertical flue damper and then up through the horizontal smoke pipe into the chimney. In this way the products of combustion come into contact with the entire surface of the boiler, thus rendering it a rapid steamer or hot water circulator. The sections have a connection or waterway up through the center of the arms, as well as outside connections, making it a horizontal boiler with perfect circulation within itself. The company use the 4-inch cast iron taper push nipple in connecting the sections of the boiler, which are drawn together by means of a three-quarter stayed rod extending from the top of the dome down through the waterways and screws to stay in the fire pot. By the use of nuts on the top end of the rods the sections are drawn into the taper nipple, thus insuring a joint which the makers state they can fully guarantee never to leak or give out with constant use.

COOLING AN AUDITORIUM BY THE USE OF ICE.*

BY JOHN J. HARRIS.

Two days previous to the commencement exercises in the Scranton High School, June, 1901, the writer was requested by the Board of Directors to devise some means by which the auditorium could be kept at a comfortable temperature during the exercises and not become overheated. Time being short, the only resource left was by the use of ice.

A rack was constructed in the fresh air inlet large enough to hold about 8 tons of ice, with several shelves having slatted bottoms, the frame being made from 2 x 6 inch hemlock studs. At 6 o'clock in the evening the ice was placed in the rack and staggered in such a way that the air was compelled to pass around and between the cakes of ice until discharged by the fan through the flues into the auditorium above, to mingle with the sultry atmosphere; tempering, diffusing and maintaining a temperature that was most invigorating. The bottom or floor of the rack was made from matched pine lumber and lined with No. 28 galvanized iron, and drained by a 2-inch gas pipe. Two fans of the disk type are employed to ventilate this building, one 11 feet diameter, and an 8-foot diameter exhaust fan, located in the attic, the air being forced into the auditorium through a vertical flue at each side of the stage and from above the dressing rooms, foul air making its exit through the registers in the floor, and which are located in the aisles. The construction of this system admits of by-passing all the air intended for the building through the auditorium.

That such an arrangement is necessary can readily be seen from the fact that the seating capacity of this room is 900, but on occasions of this kind about 1400 persons gain admittance, filling every available space to overflowing. The outside temperature was 90 degrees F., while the inside temperature was maintained at 76 degrees F. The humidity was normal, and at no time reached a point of saturation. That it proved satisfactory can best be demonstrated by the fact that the directors were so well pleased that they desire the method to be used for the coming exercises, June, 1902.

TRADE GOLF TOURNAMENT.

The following letter has been sent to the members of the Trade Golf Association, under date of June 9, by the secretary, Chauncy L. Williams:

> Arrangements have been made for the first semiannual golf tournament of the Trade Golf Association. It will take place on June 25, the day following the meeting of the Central Supply Association, at Niagara Falls, N. Y. The officers of the Niagara Falls Golf Club have very kindly placed their grounds at our disposal for the entire day. Arrangements have been made for a luncheon to be served at the club house. I am glad to report the following prizes to be played for at the tournament:
>
> The association challenge cup.
> The United States Radiator Company's cup.
> *Domestic Engineering* cup.
> *Plumbers' Trade Journal* cup.
> *Engineering Review* cup.
> Crane Company: Two silver medals.
> Crane Company: Four bronze medals.
> John Davis Company: Two dozen Haskell balls.
>
> A large attendance is counted on, and every one who is not already a member of the Trade Golf Association who wishes to enter the tournament should send in his name and a check for $3 to the secretary for the year's dues.

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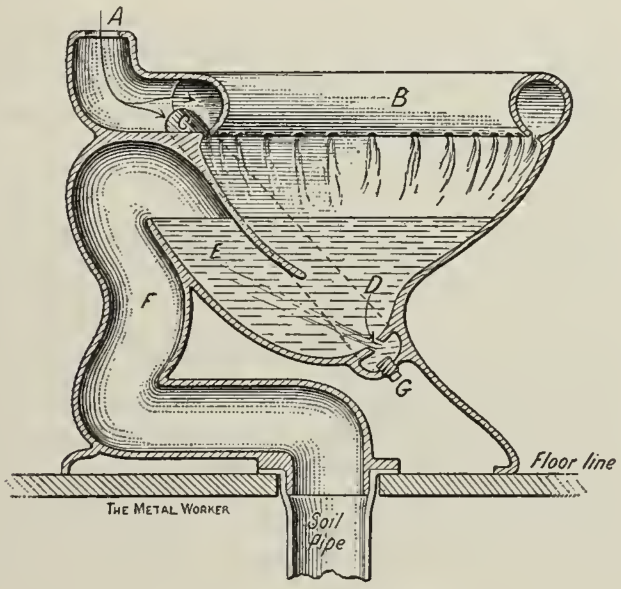
* Paper read at the summer meeting of the American Society of Heating and Ventilating Engineers, at Atlantic City, N. J., June 16, 1902.

JET SIPHON CLOSETS.

BY HELMAR.

Jet siphon closets require but one trap, which is never ventilated directly. The soil pipe may be ventilatated immediately below the closet without interfering with the action of the closet. The trap is always a part of the closet proper. These closets are made in glazed earthen ware and in vitreous china by all the sanitary potters. They are also made of iron, enameled inside, and either porcelain enameled or painted enameled outside. Both the vitreous china and the enameled iron closets are absolutely perfect so far as crazed surface or probability of crazing is concerned. They are guaranteed not to craze.

The potter's work is superior in appearance, more susceptible to ornamentation and tinting than iron, and the clay is easily modeled into any design that permits retaining the essential features of construction. The iron closet is durable. It may be with impunity handled in a manner that would ruin fragile earthen ware. Its rigid nature gives it the advantage of insuring uniformity of dimensions and operation. The value of this sameness can hardly be estimated. When a form of trap that gives the best result has been settled upon, the jet located at the right point, drilled at the right angle and of the right diameter to serve its purpose in the best manner with the least water consistent, every closet made from such patterns and mounted conscientiously may be counted upon to act in the same way.



Jet Siphon Closet.

The illustration given herewith shows the principle of jet siphon closets. The flush rim of the iron closets is not cast integral with the bowl as indicated by the cut. Integral rim jet siphon closets are made only in earthen ware. The screw plug G, shown in the cut, is found only in the iron closets. It stops a hole, through which the jet hole is drilled. The plumber will find the screw plug very convenient at times when a closet gets balky and refuses to siphon. A fissure of iron, core wire or other substance may be found under the jet hole and interfering with the action of the closet. None of these things should be in a closet when it leaves the factory, but they are there sometimes and are usually easy to extract through the plugged hole, if not otherwise.

The strength and character of the jet should be learned by holding the hand over the jet while the closet is discharging, if there is any trouble with its siphonic action. An experienced hand will notice whether the fault is in the flush rim robbing the jet by delivering the water too freely. Many flush rims on both earthen ware and iron closets are "doctored" more or less in the factory before they will siphon properly, and some adjustment is quite usual in order to make the water cleanse all parts of the bowl equally.

It is easy to chip, file or break out on a rim when the water does not come through free enough, and no particular harm is done by doing so unless the iron on iron closets is thus exposed. Then the bowl is sure to become streaked with iron stain. Iron stain on enameled bowls is not always the result of chipping out. The writer has seen closets that were enameled no further than the eye could see under the flush rim. Chips of rubber are used in the factory to plug rims that deliver the water too freely. These plugs sometimes wash out, and as the average plumber does not suspect the employment of any such means to make the closet work in the first place, he is at a loss to know what the real trouble is. The writer carries a piece of rubber in his box and can hammer a slab of it into a flush rim with as good grace as the factory man does, when necessary.

The letters in the sketch refer to the flush pipe inlet, A; flush rim, B; jet channel, C; jet hole, D; water plug of trap, E; outlet leg of trap, F, and screw plug in bottom of jet channel, G. As the traps of these closets are not vented, the water seal is made much deeper than that of an ordinary trap. This extra depth submerges the jet current and utilizes its energy completely in starting the siphonage, which it would not do with equal effect on a shallow seal. The drop leg of the trap is curved reversely and then abruptly forward, or in some equivalent manner, for the purpose of breaking up the discharged water sufficiently to get a piston effect, which produces the strong gulping action that pulls the whole contents out of the bowl at one swoop. The contents of the bowl falling through the drop leg of the trap form the acting long leg of a true natural siphonage, which continues until the bowl supply begins to diminish. The diminishing of the supply and increasing of the amount of air pulled in through the bowl break the siphonage, and the water in the trap and that in the jet channel, flush rim, &c., above the normal level reseals the traps. The action of a jet siphon begins by the energy of the jet water being imparted to that in the trap, causing it to move upward through E at a velocity proportional to the volume which the jet has to act on. In addition to the obstructed course of the drop leg F, its diameter is made less than the ordinary passage to aid the discharge water in filling it properly.

On account of jet siphon closets having to supply both the jet and the flush rim a 1½-inch flush pipe is necessary, and spuds of that size are always supplied by the factory. All low tank closets have 2-inch spuds for flush connection, and many of the low tank jet siphon closets are provided with two jet channels, connecting with a single jet hole, with a view to delivering the water to the jet more freely. The water certainly reaches the jet hole at a much lower velocity on low tank closets than it does on high tank combinations, yet the iron closets, which invariably have but one jet, seem to act perfectly.

The location of the jet hole, its size, the angle at which it is cut and the angle of the surface of the bowl just above the jet hole, all require the skill of long experienced men; but closets are now tested so severely by the makers before they are shipped that it is rarely one finds a closet faulty in jet construction.

Water Works, Drainage and Plumbing in Brazil.

The following report from Eugene Seeger, United States Consul-General at Rio de Janeiro, Brazil, is of interest to the plumbing trade:

The Brazilian coast city of Bahia has about 200,000 inhabitants, who live in 17,000 houses. The water supply available for this population is entirely inadequate. A local company, called "Queimado," have had the contract of furnishing the city with water ever since 1852. They conduct the water from neighboring mountains, and altogether have spent about $1,500,000 for water works, a pipe system, fountains, fire plugs, &c. Long negotiations between the Queimado Company and the city of Bahia for the purpose of adequately increasing the water works came to a conclusion three days ago. The Queimado monopoly is renewed for 45 years, and the company are awarded some valuable franchises and privileges. On the expiration of the contract the city has the option to buy the company's plants, at the valuation of experts. The use of water is made obligatory for each dwelling and the municipality of Bahia regulates the price—$3 a month for the average dwelling for

400 liters (422 quarts) a day and 20 reis (½ cent) per 20 liters (21 quarts) for water furnished at the public fountains and hydrants.

The improvements called for in the Queimado Company's new contract would cost about $600,000. Plans and specifications have been made by experts. Owing to the financial crisis at present prevailing in Brazil the company are unable to obtain the money required to complete the Bahia water system, and for this reason desire to sell their plant and privileges. The price asked is $1,100,000. The earning power of the Bahia water works, when completed in accordance with the new contract, is estimated at $300,000 per year. The agent of the above mentioned company assures me that the person or corporation furnishing the city of Bahia with water under the new contract will also be awarded the contract for establishing a drainage system in the city and for furnishing the houses with sanitary plumbing.

I am well acquainted in Bahia and would advise Americans in this line of business to investigate this proposition. The above named facts and figures I have extracted from the statutes of the company and a report submitted to me at my request. If desired I can easily procure all the necessary details.

Decree in Favor of Peck Brothers & Co.

By a decree of Judge Kohlsatt of the United States Circuit Court of the Northern District of Illinois, issued on June 4, the Peck Brothers & Co. of New Haven, Conn., are adjudged the sole, absolute and exclusive right to use the name of "Peck Brothers & Co.," or "Peck Brothers Company," or "Peck Brothers," or the name of "Peck" in connection with the business which they are carrying on in the manufacture and sale of plumbing goods, gas and steam fitting machinery, material and supplies and brass and iron goods, as against the Peck Brothers Company of Chicago, who have carried on a similar business under that style for the last six years.

This decision is based upon a mandate of the United States Circuit Court of Appeals, whereby a former decree in the case, on July 8, 1901, was reversed. The court further ordered that the defendant corporation, Peck Brothers & Co., and Oliver D. Peck, James H. Johnson, William A. Ratcliffe and Albert D. Sanders, as their officers and directors, are perpetually enjoined and restrained from using the name of Peck Brothers & Co., or Peck Brothers Company, or Peck Brothers, or "Peck," or names substantially identical therewith, in connection with the business of the manufacture, purchase and sale of plumbing goods, steam fitting goods and brass and iron goods, or from stamping or marking such names upon any goods manufactured by them, or from selling by themselves or their agents any goods manufactured by them having stamped thereon any of the names aforesaid.

It was, however, further ordered by the court that nothing in the decree should be construed as enjoining or preventing the defendant, Oliver D. Peck, from using his own name as an individual in the conduct of his business. The court further ordered that the cause be referred to William M. Booth, a Master in Chancery of the court, to take an account of the gains and profits, if any, which had been made and received by the defendant corporation, Peck Brothers Company, by reason of using this name in connection with their business. The report of such gains and profits is to be made by the master at the earliest possible date.

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The J. H. McLain Company, Canton, Ohio, have just issued a neatly printed price-list of 64 pages, relating to their Hot Water and Steam Heaters, Radiators, Supplies, &c. Special attention is directed to the Columbia Hot Water and Lehigh Steam Boilers, which are illustrated by means of general and broken views, the latter indicating the internal construction. The company carry a large stock of Seneca Radiators in two and three column for steam or water, and in various hights to meet different requirements. Interesting features of the publication are tables giving the area of circles and pipe data: also table of rates for hot water heating, and a great deal of other information which the heating engineer and contractor will find of value.

Heating and Plumbing Notes.

W. P. Longworth & Co. of Richmond, Va., have been awarded the contract for the steam heating of the new Henry Clay Hotel, at Ashland, Va.

At a recent meeting of the West Middle School District of Hartford, Conn., a resolution was adopted appropriating $20,000 for the installation of a central steam heating plant.

The Standard Heating & Engineering Company, Lancaster, Pa., H. H. Lindemuth, managing engineer, have purchased of W. H. Clark of Orr, Painter & Co., Reading, Pa., two No. 411 Monarch Sunshine Boilers for heating the new building of the Altoona Trust Company, in which there is 7000 feet of radiation, made by the National Radiator Company of Johnstown, Pa. They also have the contracts for the Riddelmoser Building and the residence of George B. Hyde at Baltimore.

The Plumbers' and Tinsmiths' Association of Middletown, N. Y., held their annual meeting on Wednesday, June 11, when the following officers were elected: President, William Heake; vice-president, Arthur Conkling; treasurer, William Myers; secretary, C. E. Decker; trustees: Arthur Conkling, Harry Foss, George Yetto and Harry Stedman.

An order dissolving the corporation of Hardwicke & Co., steam fitters and plumbers, Niagara Falls, N. Y., was made by Justice Childs of the Supreme Court. Postmaster Francis H. Salt of Niagara Falls was named as permanent receiver of the company.

At a meeting of the Master Plumbers' Association of Newark, N. J., held June 14, the following delegates were elected to attend the convention of the National Association at Atlantic City: Ira Budd, F. J. Sturn, William Jacobi, E. A. Bleything, C. P. Zimmerman, Robert Zettler, A. Seldon Walker, Robert Berla, Ralph Schmidt, William Demars, George Crawley and S. J. Wilson.

Hosie Brothers, Franklin, Mass., have been awarded the contract for the plumbing and steam fitting work on the almshouse building in that town.

The Board of Managers of the St. Joseph Catholic Club, Troy, N. Y., have awarded the plumbing contract for new baths for their clubhouse to Delehanty & Murphy of that town. The total cost of the baths, comprising nine showers and one tub, will be over $2000.

The Eastern Clay Goods Company, with yards and storehouses at East Cambridge, Mass., have opened a Boston office at 65 Oliver street, under charge of C. S. Robbins, treasurer and general manager. They are general sales agents for the following concerns: Robinson Brothers & Co., the Crown Fire Clay Company, the Royal Sewer Pipe & Fire Brick Company, the Lock Haven Sewer Pipe Company and the Robinson-Merrill Pottery Company, all of Akron, Ohio.

Lyman P. Haviland, chairman of the Building Committee of the New York Agricultural Experiment Station, Geneva, N. Y., will receive bids until June 28 for a heating plant at the Experiment Station.

The annual meeting of the Massachusetts Association of Plumbing Inspectors was held in Worcester, Mass., on Saturday, June 14. It was attended by about 20 of these officials from different parts of the State. The party were entertained at dinner before the business meeting. The association was organized in Worcester seven years ago, and its annual meetings are always held in that city, the semiannual meetings being held in Boston. The officers of the association are: President, Morris T. Coleman, Newton; secretary, John J. Bresnahan, Fitchburg; treasurer, John F. Hurley, Worcester.

Rourke Brothers of West Haven, Conn., have been awarded the contract for the steam fitting, air piping and plumbing in the new Lion Brewery, at Allington, Conn.

Committees representing the Journeymen's Union and the Master Plumbers' Association of Bridgeport, Conn., met on Saturday and ratified the settlement of the plumbers' strike on the lines suggested by the Arbitration Committee. While the settlement is in the nature of a compromise, it is regarded as favorable to the journeymen, who gained their demand for a minimum wage scale of $3 per day of eight hours.

A special committee on plumbing of the Board of Aldermen of Woonsocket, R. I., has been appointed to thoroughly investigate the subject and draw up a set of regulations for the installation and inspection of plumbing in that city.

The plumbers' strike at Montgomery, Ala., was settled on Saturday, and the men returned to work at their old wages of $4 a day, with nine-hour working day.

The Board of Health of Holyoke, Mass., is going after the unlicensed plumbers in that city, two of whom have recently been fined $5 in the police court for doing work without a license.

Ross & Seabury, Boston, Mass., have been awarded the contract for the installation of electric, steam heating and ventilating plants in the new Solomon Sanitarium, at Attleboro, Mass.

A circular which is being sent out by the Lombard Iron Works & Supply Company of Augusta, Ga., calls attention to the leading specialties which they manufacture, among them being High Pressure Boilers.

The J. L. Mott Iron Works of New York City are preparing plans for a new plant, to be located at Trenton, N. J.

C. Parke Cummings of the Central Machine Works, Lancaster, Pa., is using two No. 412 Monarch Sunshine Boilers made by Orr, Painter & Co. of Reading, Pa., and the Broomell vapor heating system, with 8000 feet of radiation, in the new Wheatland Hotel, at Lancaster, Pa.

H. D. Fitch, Bowling Green, Ky., has applied for a franchise to establish a plant and lay pipes for furnishing steam heat to business houses and residences in Paducah, Ky.

The Quaker Mfg. Company have begun work on their new plant at Chicago Heights, Ill. The plant will include a one-story foundry building, 70 x 150 feet; a two-story erecting and shipping building, 50 x 200 feet, and a one-story warehouse, 50 x 150 feet. In addition there will be an engine and boiler house and a pattern building. The company will manufacture Hot Air Furnaces and a line of Combination Hot Air and Hot Water Heaters.

About July 1 the Royal Heating Company, San Francisco, Cal.. will remove to much larger quarters and concentrate their entire business at 617 Mission street, in the center of the wholesale district in their line. In their new quarters the company will have a greatly increased floor space, with an abundance of light and freight and passenger elevators. This change will enable them to better take care of their rapidly increasing business. J. G. Sorgen is president and general manager, and A. B. Sorgen secretary and treasurer of the company. The concern make a specialty of heating and ventilating residences and public buildings.

A plant for the manufacture of Acetylene Gas Apparatus is to be located at Wapakoneta, Ohio. A site of 15 acres and a bonus of $12,000 have been given to the new company.

The City Council of Alexandria, Ind., have awarded a franchise to S. G. Philips for the construction and operation of a city hot water heating plant. The franchise extends over 30 years, and the Council stipulate that the city may purchase the plant at any time after two years, and that heating service shall be furnished free of cost to the city buildings.

The plumbers' strike at Sharon, Pa., which lasted for two months, has been settled. The terms of settlement are $3.50 for an eight-hour day, with time and a half for overwork and double time for Sundays. The 19 rules which had been submitted were suspended, and it was agreed to start on a new basis. Therefore no agreement was signed and the men gained one hour. In other words, they now work eight hours instead of nine for the same compensation. In all other respects the status of the case is the same as before.

The School Directors of Sayre, Pa., have awarded to H. R. Talmadge of that town the contract for furnishing the heating apparatus for the Elmer Avenue School building at his bid of $1058.

The directors of the Young Men's Christian Association at Allentown, Pa., have awarded to Hersh & Brother of that city the contract to put in a steam heating system in the Y. M. C. A. Building.

The contract for the steam heating and piping of the North Chestnut Street Grammar School, Springfield, Mass., has been awarded to the Selvey-Wyckoff Company at their bid of $3350.

George Paroschol of Athens, Greece, who was graduated this month from the Massachusetts Institute of Technology, has been enrolled in the American School of Correspondence of Boston. Mr. Paroschol expects to complete the school's heating, ventilating and plumbing course in the fall, when he will return to Greece to accept a Government position, in which he will supervise the installation of heating and ventilating systems.

The difficulty between the Journeymen Plumbers' Union and the Master Plumbers' Association of Portland, Ore., has been settled, and the journeymen have returned to work. Slight concessions were made on both sides. The men have agreed to work for none but master plumbers.

The Byrne-Powers Plumbing Company of St. Joseph, Mo., have been awarded the contract for plumbing the City Hall in that city.

The contract for furnishing a new heating and ventilating apparatus for the Hoosac Street School building, Adams, Mass., has been awarded to P. T. Connors of that city. Mr. Connors will use Royal Heaters.

John P. Smith has a contract to install a steam heating apparatus in the Home for the Aged, York road and Hunting Park avenue, Philadelphia, at a cost of $1395.

The plumbers' strike at Uniontown, Pa., has been settled by the employers agreeing to grant an eight-hour day at $3.50 per day wages.

Barlow Brothers Company have secured the contract for plumbing the freight house of the N. Y., N. H. & H. R. R. Company, at Waterbury, Conn. They are also doing the plumbing and heating in the residence which is being erected in that city by E. L. Frisbie.

Frank I. Lessard & Co., Springfield, Mass., have just completed the plumbing in the Presbyterian Church at Thompsonville. They are now doing the plumbing, heating and gas fitting in the Ducharme Block on Round Hill, and the McKinney Block on Main street, and are engaged upon a number of other contracts aggregating a considerable amount.

The Master Plumbers' Association of Cleveland, Ohio, at a meeting held last week, adopted a resolution expressing the sentiment of the association as strongly favoring the employment of none but local architects on the Supervisory Commission for the grouping of public buildings. This expression has been presented by a special committee to the Cleveland City Council, the Board of Control, the Chamber of Commerce and the Builders' Exchange, as well as to the Mayor of the city and the Governor of the State.

All the master plumbers of Birmingham, Ala., last week took off their coats and set to work on a job to help Ben F. Barbour, a brother master plumber, to complete a piece of work in accordance with a contract. A strike of the local journeymen plumbers threatened to cause considerable loss to Mr. Barbour.

The master plumbers and tinners of Morristown, N. J., have granted their employees an eight-hour day, beginning with Monday, June 16.

Sealed proposals for furnishing and installing a plumbing and drainage system in a new brick fire station on Monet Road, West Newton, Mass., will be received until June 23, at the office of the Public Buildings Commissioner, West Newton, Mass.

The City Council of Jacksonville, Ill., has granted a franchise to the Steam Heating, Electric Power & Light Company, to construct a large central plant for the purpose of heating stores by hot water.

The Master Plumbers' Association of South Bend, Ind., are making preliminary arrangements for the annual meeting of the Indiana State Association of Master Plumbers, to be held in that city next March. David A. Westbury is the chairman of the Committee on Arrangements.

The fact that New Orleans, La., is shortly to undertake the great work of sewering the city will immensely increase the importance of the plumbing trade in that city. Both the master plumbers and journeymen plumbers of New Orleans believe that, in anticipation of the expansion of plumbing, legal provision should be taken to prevent incompetent men from engaging in the trade whose inefficient work would tend to the detriment not only of the plumbing trade, but also of the public health. A meeting was held recently in New Orleans, when a bill was prepared for presentation to the city authorities providing for a board composed of representatives of the city Board of Health, the City Engineer, three master plumbers and two journeymen plumbers, to be appointed by the Mayor, whose business it will be to supervise all plumbing work and to examine applicants for licenses as plumbers.

The Union Light & Heat Company, Cincinnati, Ohio, are now in new quarters at 106 to 108 East Second street, where they occupy the entire five floors of a 30 x 100 foot building in the manufacture of the Benedict Acetylene Gas Machine and the Graf Improved Acetylene Gas Range and Hot Plates. The company have just issued a neat little booklet referring to their specialties which they will be pleased to send the trade upon application.

The Field Automatic Valve & Faucet Company, 162 Dorrance street, Providence, R. I., are sending to the trade a six-page folder devoted to the Perfection Low Down Knurled Pattern Nickel Plated Basin Cock, which is shown in different styles, and is adapted for use in all classes of buildings, mills and factories, as well as the most elegant private residences. It is claimed that these Valves will not water hammer, have no stuffing boxes or steam packing and work equally well for cold and hot water. Another point is that they will open when the water is shut off from a building to allow the water to drip from the pipes and thus prevent freezing. Another circular shows the company's Self Acting Bail Cock.

New Firms and Changes.

Edward Saehrig has bought a half interest in the plumbing, gas and steam fitting and tinning business of Samuel Haeslip, at Saratoga, N. Y.

William Hillman and H. W. Hagen are starting in the plumbing and heating business at Sydney, Cape Breton.

The Sieben Mfg. & Supply Company of Kansas City, Mo., of which the late Dent Yates was a member, have been reorganized. The capital stock has been increased to $50,000, and the firm of Sieben & Conity have combined with the new concern. Charles E. Davis is president, Henry Sieben vice-president and Homer E. Davis secretary and treasurer. These officers, together with D. O. Smart and B. Howard Smith, constitute the Board of Directors. The company will manufacture Plumbers' Supplies.

The Scoville Plumbing & Heating Company of Denver, Col., have been incorporated with a capital stock of $1000 by Henry Scoville, Almon E. Hull and Louis M. Hovey.

Schwar & Pentz of Boston have opened a branch plumbing shop at Newton, Mass.

The National Electric Heating Company, with principal office at 211 Market street, Camden, N. J., have been incorporated with a capital of $250,000 by Robert Watt, Paul Hafter and John O. Wilson, to carry on an electric heating business.

Carney Brothers Company of Utica, N. Y., have been incorporated with a capital stock of $6000 to carry on a plumbing business. The directors are John F. Carney, E. Carney, Henry C. Brunett and Herman Petersen, all of Utica.

William H. Deisseroth, who for several years has conducted a plumbing business at 259 Broadway, Newburgh, N. Y., has disposed of his business and accepted a position with the Central Hudson Steamboat Company.

The Jacksonville Hot Water & Steam Heating Company of Jacksonville, Ill., have been incorporated with a capital stock of $50,000 to operate a heating plant. The incorporators are John Cherry, Jr., John Cherry, Sr., and Joseph Brown.

The Gardner-Woolner Electric Heater Company of Chicago have been incorporated with a capital stock of $100,000 by Fred. B. Waring, Charles A. Woolner and Frank D. Thomason.

The Simpson Mfg. Company, with principal office at Roselle, N. J., have been incorporated with a capital of $100,000 to manufacture Sanitary Appliances. The incorporators are James Simpson, Daniel Schwarz and Otto Platzer.

F. Folsom will open a plumbing shop at 6240 Ashland avenue, West Englewood, Chicago.

The Bradlee & Chatman Company, Boston, Mass., have been incorporated with a capital stock of $30,000 to manufacture Heating Apparatus. John E. Chatman is president of the company, and Charles W. Bradlee, treasurer.

The Kirby-Williams Company have been organized at Pittsburgh, and are dealers in Machine Pipe, Pipe Cutting, Threading and Bending; also second-hand Pipe and Machinery. The plant of the concern is located at 216 South Main street, West End, and the firm are composed of John T. Kirby and John Williams.

Stove and Hardware Dealers.

B. W. Crone has recently purchased the Hardware, Stove and Tin business of W. J. Ohlhleser, Juniata, Neb., and is continuing at the old stand.

R. M. Bower, in the Hardware business at Whigham, Ga., requests catalogues and price-lists concerning Hardware and related lines.

Meyer & Soffel, Hardware, Stove and Agricultural Implement merchants, Maywood, Ill., have been succeeded by Frank Meyer.

Reed & Wheeless have sold their Hardware, Stove, Implement and Sporting Goods business in Hopkinton, Iowa, to G. W. Collins.

Wm. H. Munson of North Woodbury, Conn., has disposed of his Hardware, Stove, plumbing and tinning business to Strong & Munsell.

D. D. Nelson, in the Hardware, Stove and plumbing business in Granville, N. Y., has been succeeded by D. D. Nelson & Co.

D. B. Bradshaw, in the Hardware, Stove, Farm Implement and furniture business in Terral, Ind. Ter., has been succeeded by Bradshaw & Lewis.

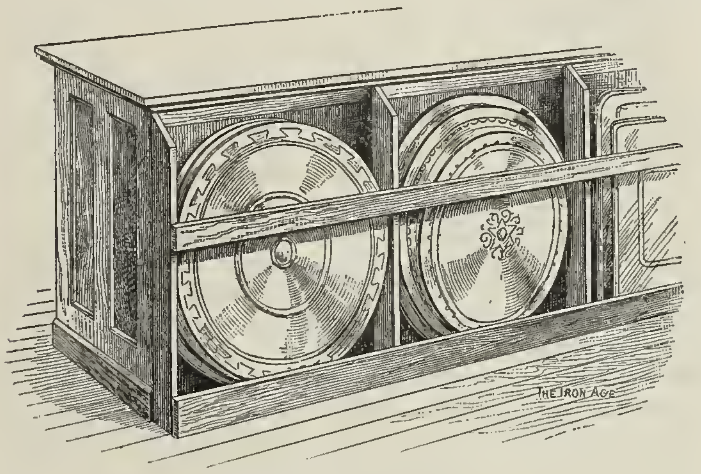
M. S. Mathews, 323 Boston Block, Minneapolis, Minn., has been appointed secretary of the Minnesota Retail Hardware Association, succeeding the late Thomas McCracken. Mr. Mathews has also been chosen secretary of the Minnesota Retail Hardware Dealers' Mutual Fire Insurance Company.

F. Kieferle has been succeeded in the Hardware business in Marion, Kan., by Kieferle Bros., who will be pleased to receive catalogues pertaining to Hardware, Stoves and Tinware, Agricultural Implements and Sporting Goods.

Goodell Company, Antrim, N. H., with New York office at 10 Warren street, issue an illustrated pamphlet describing a number of Apple, Potato and Vegetable Parers, also a Cherry Stoner. In 1864, the pamphlet states, Apple Paring Machines were first made by the president of this company.

Keeping Stove Boards.

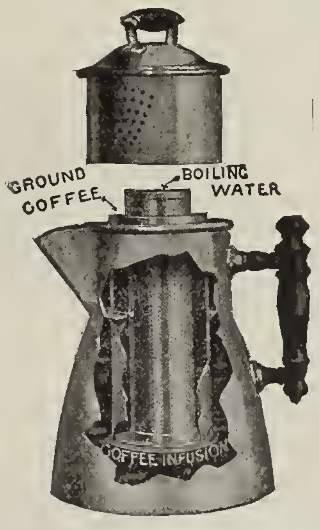
The method of keeping Stove Boards in use in the store of James Wilson, Stamford, Conn., is clearly shown in the accompanying illustration. As will be seen, Boards 3½ inches wide are fastened at intervals to the front of a counter. Across these are fastened two strips, one at the base and the other a little more than half way up. The Stove Boards are put in the spaces thus made, where they are out of the way and at the same time of easy access and in plain view of customers.



Keeping Stove Boards.

Ideal Percolating Coffee Pot.

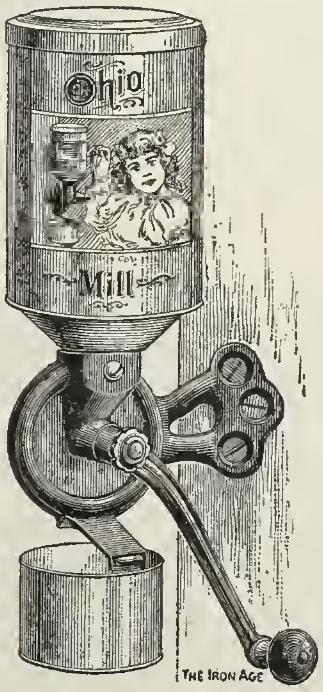
The Aluminum Cooking Utensil Company, Pittsburgh, Pa., are now manufacturing and placing on the market the Ideal percolating coffee pot, of which we present an illustration. This pot is made of aluminum, and its construction and points of excellence are briefly described as follows: There is no strainer in the spout, such as is found in the ordinary coffee pot and which is difficult to keep clean. The cover also has no hinge to get out of order. The cover of the Ideal coffee pot is so constructed and is so utilized that a strainer is provided or a steam tight pot is secured, as desired. The spout and body of the pot are formed of one continuous piece of metal without joint, seam or solder, and are therefore free from danger of leaking. The percolator, the construction of which is shown in the broken view given in the illustration, is simple in construction. The tubes are all made of very finely perforated sheet aluminum. The percolator is suspended within the pot, and the coffee, which must be finely ground, is placed in the space between the tubes. Boiling water is then poured in the tube which projects above the pot for this purpose. The bottom of the upper tube is closed without perforation and that of the inner tube is open. The pot is made both with and without the percolator, as desired. It is steam tight and the ground coffee is arranged between the two tubes in a uniform cylinder zone ½ inch thick. In this way, it is claimed, the boiling water, in percolating through the coffee, comes into immediate contact with every particle of it in the shortest time possible. The same pot may also be used for tea. The makers claim that by the use of aluminum in the manufacture of the pot cleanliness, purity, lightness and durability are secured.



Ideal Percolating Coffee Pot.

The Ohio Coffee Mill.

The Sun Mfg. Company, Greenfield, Ohio, have added to their line the coffee mill herewith illustrated. It has a decorated tin hopper holding 1 pound, and a tin cup. The castings are made in two pieces, combining, it is remarked, simplicity, strength and lightness. The burrs are referred to as being constructed on an entirely new principle, in that they do not come in contact with each other, but are adjusted to each other with a flat surface and operate like a pair of shears, shearing the coffee in a clear, clean cut. The coffee is fed in uniform quantity into the burrs, is sheared in fine lumps, drops to the bottom of the V in the burrs and into the cup. It is stated that the coffee is not crushed and rubbed, and that the burrs constantly clear themselves. It is pointed out that the draft is reduced 50 per cent. by the burrs not touching each other, and that the uniformity of the feed insures a uniform draft.



The Ohio Coffee Mill.

The Reed Mfg. Company.

We have received from the Reed Mfg. Company, Newark, N. Y., copies of two catalogues, the first of which covers their line of Reed's patent anti-rust tinware. The second catalogue is devoted to Reed's extra heavy hand made pieced tinware, copper boilers, copper and nickel plated goods and galvanized ware. The two catalogues are gotten up in similar style on fine paper and illustrated with excellent engravings, each being of about 100 pages. A view of the company's factory at Newark is presented at the beginning of each catalogue. Reed's patent antirust tinware is shown in the first publication in a variety of styles, covering nearly all the ordinary lines of tinware, including plain and strainer pails, covered pails, creamery pails, dippers, cups, measures, milk strainers, wash basins, pudding pans, milk pans, sauce pans, preserving kettles, pie plates, dish pans, sprinklers, tea and coffee pots, wash boilers, oil cans and a handsome line of toilet ware, together with Reed's polished steel self basting roasters.

A similar line of goods made of heavy hand made pieced tinware are included in the second catalogue, also a line of stamped tinware and a handsome variety of nickel plated and copper ware, including tea kettles, coffee pots, dippers, cuspidors, galvanized pails, dish pans, wash basins, oil cans, grain measures, toilet ware and sprinklers, occupy the following pages. The last pages are devoted to the O. H. one piece stove pipe elbows, the Misses Lisk's improved patent cake tins and measuring cups, self cleaning graters and the O. K. stove pipe thimbles.

Cold Working Sheet Metal In Dies.*

BY J. D. RIGGS.

IN TWO PARTS. PART II.

In drawing and reducing bright steel I have found it possible to draw to 9 inches diameter, anneal and reduce to 6 inches diameter at one operation; but this is rather too much; from 8 to 6 inches is much better. When the side of a cup is to be used as a seamless band without flange, either inside or out, the tool shown in Fig. 17 will be of service in a lathe.

It is often necessary to turn a flange around a hole, but this is found a very different problem from turning an outer edge. In turning out a flange ¼ inch high around a 2-inch hole in IXX tin so many pieces were spoiled by cracking at the edge that we made new dies and drew the stock in before cutting the hole. These holes were punched 1⅜ inches when turning them out to form a ¼-inch edge around a 2-inch hole. Another case of this kind was done by hand tools instead of in a press, and proved entirely successful. In Fig. 18 R represents a section of a steel bicycle wheel rim through the hole for the valve tube. The ⅜-inch valve tube required a 13-32-inch finished hole. The rim was first drilled to one-third of the finished size. The hand punch, made to the finished size of the hole with the pilot *n* 1-32 inch larger than the drilled size, was driven through with six or eight blows of a hand hammer, while the " hold on " *q*, weighing some 3 pounds, was held up with a light spring. Block, *o*, with ½-inch hole, *p*, was held in a bench vise. The material was No. 16 gauge, and reduced to about half this thickness without cracking. The rims were stiffer through this reenforced hole than elsewhere.

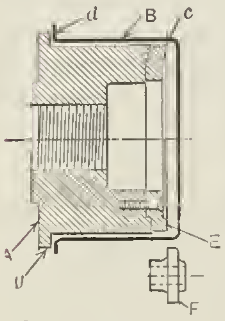


Fig. 17.

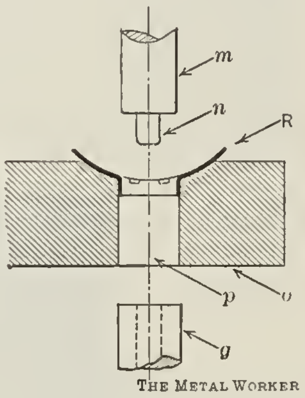


Fig. 18.

Some work with straight sides and sharp angles may be cut out in dies such as shown in Fig. 19, which consists of four hardened steel pieces attached to a cast iron base. I have not found this to materially reduce the cost of the dies, but the straight sides of both punch and die may be ground true after hardening and in this way improve the work. The pawl and ratchet may be used in various forms for spacing holes or notches. Figs. 20 and 21 show the construction of a horn die used to punch holes in the side of a cylinder. In this case a notch in the edge of the work engaged the pin *e;* the operator turned to the left until the pawl dropped into a notch and then held to the right while punching a hole. Ratchets are used for notching armature stampings where the ratchet is somewhat smaller in diameter than the work and lies horizontal.

Work on the side of a cylinder is commonly done in a horn press, where a horn similar to *c*, Fig. 20, is attached directly to the back of the press.

The particular construction to adopt in making a die will often depend on shop conditions and tools available. The die shown in Fig. 2 contains the hardened ring *m* and the soft tool steel ring *k*. These rings should be made weldless, and *k* may be either welded or brazed to the machine steel punch body *i*, while *m* should be ground on the extreme inside and outside and on the bottom. The ring *n* should be tool steel, and may be welded by an expert smith, but if the smith is doubtful it had better be forged without welding. When it is important to maintain a standard diameter of work a hardened ring, *l*, or, in case of lettering or ornaments, a disk, is used. In single acting press dies it is the die center, *l*, rather than the interior of the punch, *k*, which determines the diameter of the work. It is well to have the interior of the punch a close fit in work, such as can ends, where the edge is all drawn in, but in cases where a radial edge is left, such as shown in Fig. 7, the punch may be comparatively loose. In double acting press dies the inner punch determines the size and often the shape also of the work, while the die may not fit the work all the way but only at the upper corner.

In regard to foundry patterns for small die parts I have found it a matter of economy to have on hand six or eight sizes of bottom plate patterns, *u*, Fig. 3, well made and varnished, with core prints and a core box to core the slots *z* straight sided and to leave a spot, *w*, to finish. To this base pattern " hurry up " pieces are added as needed for individual dies, the same base pattern being used for die Fig. 2 and die Fig. 3, with different additions, and in case of Fig. 3 a central core. Die castings made from such patterns need not be machined all over.

In dies for double acting presses, which cut the blank as well as form it, a hardened and ground ring, *e*, Fig. 15, is used with a steel ring, *c*, welded to the wrought iron plate *b;* these do the cutting, and when the corner *d* of ring *c* becomes dull it is upset by hammering on the lower face, which must then be turned up again to fit the hardened ring *e*. The inside plunger *a*, Fig. 15, may be made of machine steel, for working tin plate or brass; but for working steel it had better be either hardened steel or cast iron. In this particular die a little variation in the diameter of the inner punch *a* is of no consequence; if the work had been blanked out first in another die, or cut into disks in the circle shears, then this die might have been made entirely of cast iron, and would consist of only three pieces similar to the die shown in Fig. 16, with perhaps a chilled surface, *g*.

The die shown in Fig. 16 was made of cast iron, except the plate *l*, which was of machine steel. The outer punch *i* and the die *k* were cast at a car wheel foundry, and the working faces *j* and *s* were chilled very hard. This die worked well on tin plate. Another die, made of cast iron and chilled in the same way, working on black steel which had been annealed after the first operation and was rough, gave much less trouble than previous dies on the same work with hardened steel rings on the faces, although either had to be ground true and polished occasionally.

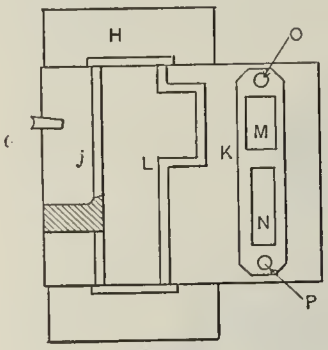


Fig. 19.

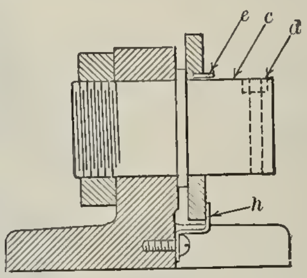


Fig. 20.

In drawing deep work, or in cases where the metal is severely worked, it is customary to anneal the work one or more times during the process, but tin plate is ruined by annealing; hence such work is drawn and annealed before plating, or, if some stiffness is required in the finished piece, one drawing operation may be performed after annealing and plating.

In cutting and forming bright steel it is customary to use oil as a lubricant and apply it in spots over the sheets before they are cut up into strips. In working tin plate the coating of tin, together with the thin film of oil left on it from tinning, are ordinarily sufficient lubrication; but in drawing large pieces in a double acting press a stick of paraffin wax may be passed once around near the edge of the blank. In working black steel plate which is to be tinned afterward oil is objected to by the tin house foreman as making him extra work, and an alkaline solution which will clean in an acid pickle is used, either soda water or a soapy water. One concern buys a soap made from fish oil, puts about a pound of this in a gallon of water and applies with a sponge to each side of the blank.

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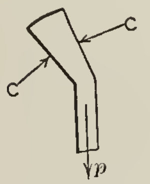
* Presented at the Boston meeting (May, 1902) of the American Society of Mechanical Engineers.

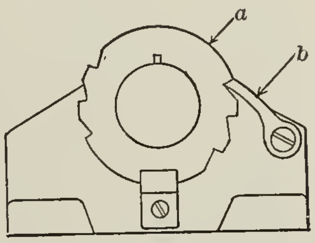
A day's work for a boy or a girl and a press will depend upon the shape in which the stock comes to the press as well as the speed of the press and the dexterity of the operator. With a die such as shown in Fig. 2, for cutting and forming ends 4 inches in diameter or smaller, from tin plate cut into strips 20 inches long and wide enough for two rows of ends, an experienced operator will produce from 8000 to 10,000 pieces in ten hours. With a similar die for making ferrules for wood handles out of the scrap thrown into a pile a boy will probably get 2000 ferules in ten hours. A press with automatic feed, cutting bicycle chain links, will produce about 90 pieces a minute, working steel in long strips rolled up. The gang die cutting and forming can ends from sheet, shown in Fig. 4, cut about 11 sheets per minute, making two strokes to a sheet, while the other gang die described cut about 20 sheets a minute, but from this some time is to be deducted for handling stock, &c. A large drawing press on work from 10 to 20 inches in diameter and from 2 to 6 inches deep will produce from 3000 to 5000 pieces in ten hours, but if such work does not "nest" well together it may occupy so much room as to retard the work.

The length of time that a die may be used at one sharpening will depend upon conditions and may vary from half a day to two months. The material of the punch and die, the material worked, the angle of the cutting edges, or the complement of *a*, Fig. 2, and the shear of the die, are the principal factors in the life of the cutting edge. I have seen dies used for ten weeks on tin plate at one sharpening. Fifty hours is about the average time in an electrical factory for dies cutting No. 26 gauge soft steel. Dies cutting bright soft steel for builders' hardware, from 1-16 to ⅛ inch thick, with both punch and die hardened, ran from two to four days at one grinding. Dies with square corners for cutting edges. and no shear on either punch or die, ran about half as long as dies cutting the same pieces from the same stock with a cutting edge of about 82 degrees and with shear. The high and low points in the upper edge of *m*, Fig. 3, may be about 1-16 inch difference in hight, and the angle *a*, Fig. 2, from 5 to 10 degrees.



THE METAL WORKER

Fig. 21.



THE METAL WORKER

Fig. 22.

The selection of a suitable press deserves more attention than is something given to it, too small a press being liable to spring and injure the dies, while too large a press is slow and clumsy. Presses for cutting only may generally be much lighter than when used for cutting and forming combined. In a stamping factory the expense may often be greater for dies than for presses, and if a different press is more suitable it may pay to buy it even though a first stands idle a part of the time.

The steel best adapted for sheet metal drawing is not readily distinguished from its performance in the regular tensile test, for drawing produces a different form of stress in the metal. We may represent an elementary section of a piece of sheet metal being drawn by Fig. 22, where *p* represents the tensile force due to the thrust of the press and *c c* the compression due to the wedge shape of the elementary piece and its resisting the force *p*. As these elementary pieces abut against each other and are all coming in together, there is comparatively little friction for the force *p* to overcome, and the relative magnitudes of the forces may be represented by the triangle obtained by producing the two sides of the tapering part until they intersect. From this triangle of forces we may conclude that the change of form is due to tension in one direction combined with compression of about twice the magnitude in another direction, while the force in the third direction, or that of its thickness, is only nominal, or just sufficient, to keep the wrinkles from forming. As the stock pulls over the corner, bends and straightens again, the tensile stress is thrown first to one surface and then to the other, and in this way does more stretching than it otherwise would.

Several instances have come to my notice which would indicate that the action of steel under this combined stress of tension in one direction and compression in another is different from that under either stress taken separately.

The two examples mentioned above, where a 1⅜-inch hole could not be stretched to 2 inches without tearing, under tensile stress alone, and the wheel rim which stretched from 9-64 to 13-32 inch under a combined tensile and compressive stress, indicate something more than a variation in stock. In one case we fail to get an elongation of less than 50 per cent., while in the other we get easily an elongation of 200 per cent.

Special Sheet Metal Work.

The Avery Stamping Company, Cleveland, Ohio, call attention to their ability to perform drawn, dished, flanged, pressed, sheared and intricately shaped sheet steel work of almost any description. They have been in the general metal working business 17 years, during which period machinery and appliances that would serve to facilitate and improve have constantly been added, until at the present time they own a very complete and efficient equipment of hydraulic drawing and blanking presses of enormous power, shears, flanging machines, punches, &c. They make a very large variety of special articles, such as seamless steel tanks for automobiles or for holding all kinds of fluids and gases, cylinders and shells, for which they also make heads and bottoms; heavy pans and numerous other vessels, sketch plates, 18 gauge and heavier, especially of small dimensions, all furnished promptly according to specifications. Standard and special washers are also made.

Empire Iron & Steel Company.

The Empire Iron & Steel Company, organized some time since, are building a plant at Niles, Ohio, consisting of six sheet mills, bar mill and squeezers, with scrap and puddling furnaces, waste heat boilers, steel buildings, trestle tracks for unloading, cranes, shears, machine shop and all small machines to operate by electricity. This plant will have all labor saving appliances known to good rolling mill practice, and is being built for service and economical cost of production. The engines are of the Allis make, the firing boilers are made by the Stirling Company, and the waste heat boilers are of the Cahall type. Everything about the plant is of the same standard of excellence. All contracts have been let for several months, and the mill will likely be in operation in August.

A REPORT from Seattle states that smelters for Tin Ore and Block Tin works are shortly to be erected in that city in connection with the development of the Tin deposits found in the vicinity of Cape York. W. M. Courtois of Detroit and other capitalists are preparing to open up these deposits, which are said to cover more than 2000 acres in the immediate vicinity of Cape York, and to contain large deposits of Placer Tin and Tin Stone of the highest grade. Samples of the Ore brought to Seattle recently proved very rich in metal, one 20-pound piece of Ore showing 64 per cent. of Tin.

PATTERN FOR SINK DRAINER.

(Without allowance for laps.)

It is often the case that the trap under the kitchen sink is choked or blocked, owing to a collection of refuse matter. To avoid this a sink drainer is used. A perspective view of an article of this kind is shown in Fig. 1. This drainer is intended for use in the kitchen sink, being fastened through the wire loops A, B and C. The refuse matter is poured into the drainer, from which it is easily removed. It can be made of tin or black or galvanized iron, but where a good job is wanted it had best be made of 16-ounce copper.

To obtain the pattern for any sized drainer proceed as follows: First draw the plan of the drainer, A B C in Fig. 2, which gives the size of the top opening. A B C is a right angle, the arc A C being struck from the center B. Directly above the plan draw the side elevation, as shown by D E F, making D E the desired hight and E F equal to A B. Draw a line from F to D, which will give the flare of the drainer and radius with which to strike the pattern. Now divide the arc A C in the plan into an equal number of parts, as shown from 1 to 6. Then, using D F in the elevation as radius and D in Fig. 3 as the center, describe the arc 1 6. From any point in the arc, as 1, draw the line 1 D. Then, starting from the point 1, lay off on the arc 1 6 the stretchout of the arc 1 6 in the plan, Fig. 2, as shown by similar figures on 1 6 in Fig. 3. Draw a line from 6 to D. Then will 1 6 D represent the front of the drainer shown in Fig. 1. Small perforations should be punched as shown in Fig. 3. Now with D E in Fig. 2 as radius and D in Fig. 3 as center describe the arcs E and E, which intersect with arcs struck from 1 and 6 as centers and F E or A B in Fig. 2 as radius. Draw lines, as in Fig. 3, from 1 to E to D and D to E to 6. Then will 1 6 E D E 1 be the full pattern. Laps must be allowed for seaming at the corner B in the plan in Fig. 2, and edges for wiring at the top, allowing wire loops to project at the corners, A, B and C in Fig. 1.

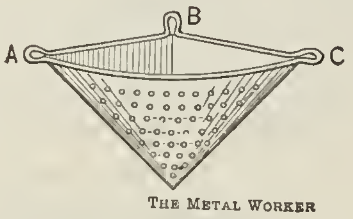


Fig. 1.—Finished View of Sink Drainer.

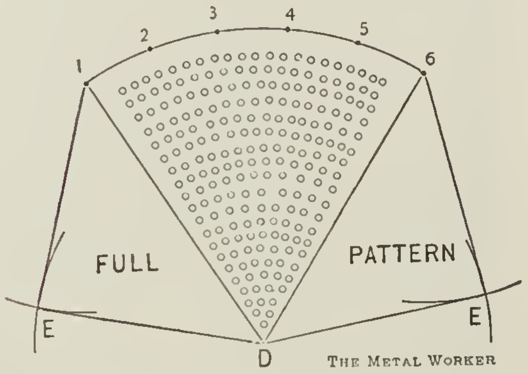


Fig. 3.—The Pattern Shape.

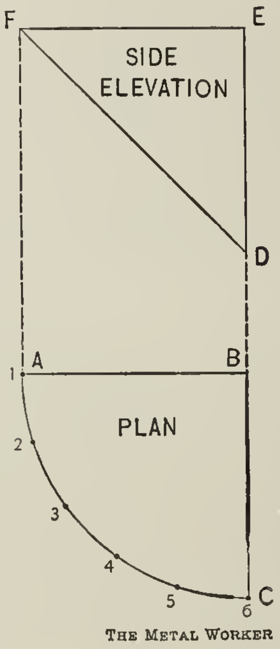


Fig. 2.—Plan and Elevation.

PATTERN FOR SINK DRAINER.

H. J. Pratt & Co., Sheet Metal workers, Springfield, Mass., have recently moved into fine, new quarters on Dwight street. The firm have just secured an important contract for the Galvanized Iron work in connection with the North Chestnut Street Grammar School at Springfield. Another large contract which has been taken by them is for the Cornices, Skylights and all the metal work on the new block which Joseph La Liberte is building on Oak and State streets.

FLASHINGS

Lodges of the Amalgamated Association have recently been formed in connection with a number of the independent Sheet mills, and these mills, which have heretofore been operating on a nonunion basis, will be asked to sign the amalgamated scale on July 1. It is estimated that fully a dozen mills will then come under the jurisdiction of the association. But little trouble is feared, as the majority of the companies are said to have already signified their willingness to sign the amalgamated scale.

The Ashland Sheet Mill Company, Ashland, Ky., are preparing to start two more Sheet mills in addition to the four already running. The plant will have eight Sheet mills when completed, as well as a galvanizing department.

Work is being rapidly pushed on the new plant of the McKeesport Mfg. Company, at Port Vue, near McKeesport, Pa. The plant will start with ten hot mills, but the company possess enough land to double the plant when the increase in their business calls for such expansion. It is expected that the new plant will start into operation about November 1.

The American Sheet Steel Company have nearly completed some important repairs and improvements at their works at McKeesport, Pa. Two new mills have been added, making 18 Sheet mills in all. The plant will be restarted before the end of this month.

John H. Middleton, cashier of the Youngstown Iron, Sheet & Tube Company, Youngstown, Ohio, has accepted a position with the Valley works of the Republic Iron & Steel Company, Youngstown. He has been succeeded by Frank Jarvis.

Henry Weyand, Waterbury, Conn., has taken the agency for the Smith-Warren Company's Metal Window Frames. He has lately secured contracts for 25 of these Frames in the new warehouse of R. N. Blakeslee, Waterbury, and three for the Naugatuck Malleable Iron Company, Naugatuck, Conn.

George C. McMurtry, president of the American Sheet Steel Company, has taken several ministers of the Gospel from Vandergrift, Pa., and its vicinity, on a trip abroad. The voyage is to include all the usual points of interest in Europe, together with a visit to the Holy Land.

The John Schwing Company, Bridgeport, Conn., have been incorporated with a capital stock of $5000, to repair Cornices and Skylights. The officers are: John Schwing, president and treasurer, and Katie Schwing, secretary.

Previous to his departure from Elwood, Ind., Clark Price, who has been appointed private secretary to President D. G. Reid of the American Tin Plate Company, was entertained by a number of his fellow employees at the company's Elwood plant, at a banquet at the Stephenson Hotel, Elwood, when a number of handsome gifts were presented to him in token of the esteem of his fellow workers. Mr. Price has been local manager of the Elwood works since the resignation of F. M. Strong.

An unusually large number of the Welsh mill men employed in the various Tin Plate and Sheet mills have gone over this year to visit their native country.

Steel Fronts, Metal Coverings and Fire Proofing for all kinds of buildings form the subject matter of an illustrated circular issued as a supplement to their regular catalogue, by the St. Paul Roofing, Cornice & Ornament Company, St. Paul, Minn. A number of halftone views are given, showing examples of artistic sheet metal building construction in the case of stores, banks, residences, small factories and public buildings covered by Galvanized Steel Fronts and Siding. Diagrams are also given with directions as to measurements in asking estimates or ordering material for this work, also tables of comparative costs of construction of different kinds of materials.

The eleventh annual convention of the National Association of Master Composition Roofers will be held in Providence, R. I., from July 16 to 18. The objects of the association are to maintain an organization for the benefit of persons engaged in the business of Composition Roofing; to promote uniformity of customs; to acquire and disseminate among the members information in reference to methods of doing work; to establish a superior quality of material and workmanship, and to facilitate the speedy adjustment of business disputes.

It is probable the Canonsburg works of the American Tin Plate Company, at Canonsburg, Pa., will be closed down about July 1, and that the plant will not again be operated. It is a five-mill plant, and the equipment will likely be removed to some other of the more important works of the American Tin Plate Company.

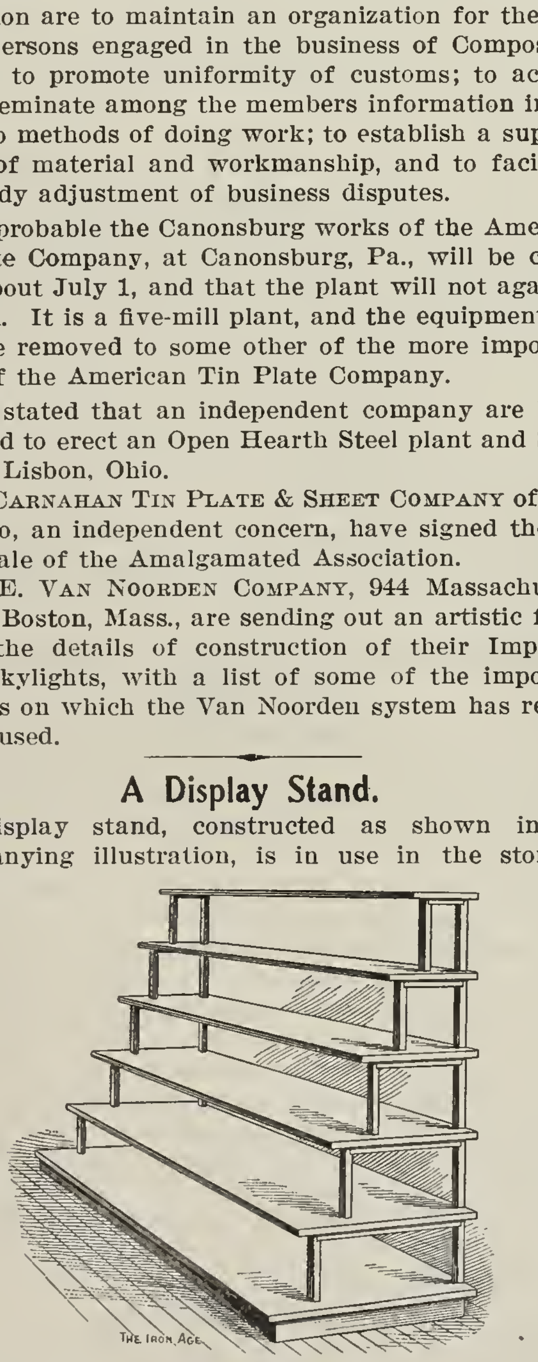
It is stated that an independent company are being organized to erect an Open Hearth Steel plant and Sheet mills at Lisbon, Ohio.

The Carnahan Tin Plate & Sheet Company of Canton, Ohio, an independent concern, have signed the Tin Plate scale of the Amalgamated Association.

The E. Van Noorden Company, 944 Massachusetts avenue, Boston, Mass., are sending out an artistic folder giving the details of construction of their Improved Metal Skylights, with a list of some of the important buildings on which the Van Noorden system has recently been used.

A Display Stand.

A display stand, constructed as shown in the accompanying illustration, is in use in the store of James Wilson, Stamford, Conn. It will be noticed that each shelf is a little narrower than the one directly under it, thus permitting the articles on the lower shelves to be seen to good advantage without compelling the customer to lean over. The shelves are finished in cherry stain, and hold a variety of articles to which it is desired to attract attention.



A Display Stand.

The Sheet Mill Scale Settled.

At a conference held in Pittsburgh on Friday, June 13, between Persifor F. Smith, John Warner and Harry Cook, representing the American Sheet Steel Company, and the Sheet Mill Conference Committee of the Amalgamated Association, the wage scale governing sheet mills for the year ending June 30, 1903, was adopted. The scale is practically the same as the one which expires on June 30 next, the base rates being as follows:

It is agreed that when the actual average selling price of Nos. 26, 27 and 28 gauge plain sheet steel, f.o.b. mill, is 3 cents per pound the wages for rolling on a sheet and jobbing mill shall be as follows, with 2 per cent. additional for each one-tenth advance above said 3 cents selling price, and 2 per cent. decline for each deduction of one-tenth to said 3 cents selling price:

Gauges.	Price for rolling iron, per ton, 2240 lbs.	Price for rolling steel, per ton, 2240 lbs.
No. 8 and heavier	$3.60	....
Nos. 9 to 11	4.00	....
" 12 to 14	4.80	....
" 15 to 17	5.55	....
" 18 to 21	6.75	....
" 22 to 24	8.00	$8.80
" 25 to 26	9.20	10.12
No. 27	10.00	11.00
" 28	10.65	11.71
" 29	11.15	12.30
" 30	12.00	13.20
" 31	15.60	17.10
" 32	18.90	20.80

Gauges.	Price for rolling on a 3-cent card, per ton, 2240 lbs.
No. 8 and heavier	$3.00
Nos. 9 and 10	3.50
No. 11	4.00

This to apply to only jobbing mills rolling No. 18 and heavier over 48 inches in width.

The only changes made in the scale were in the foot notes. No. 4 was changed to read as follows:

No. 4. "All sheet iron or sheet steel shall be weighed by the company after being sheared and opened, and the company shall furnish the complete weight of each turn to the roller when run over and annealed in open furnace, or put the same in a convenient place in the mill within a reasonable time after being made."

In the sheet mill hands' scale no changes were made, but a new foot note, No. 17, was added, as follows:

"17. 25 gauge and lighter, double double, eighty-four (84) pairs shall equal 105 pairs of double iron, and not to be averaged. This to apply only to sheets sixty (60) inches long and shorter lengths."

In the scale for roughing and catching on sheet and jobbing mills no changes were made, but a new foot note, No. 7, was added, which reads:

"7. 25 gauge or lighter, double double, 84 pairs shall equal 105 pairs of double iron and not to be averaged. This is to apply only to sheets 60 inches long and shorter lengths."

No time has yet been fixed for a conference between officials of the American Steel Hoop Company and the Amalgamated Association. At a recent meeting some changes in the foot notes of the bar iron scale were asked by the American Steel Hoop Company, and these are now being considered by the Amalgamated Association. It is probable another meeting will be held at an early date, perhaps this week or next week.

No time has been fixed for a conference between officials of the American Tin Plate Company and the Amalgamated Association, but a meeting will likely be held in New York City at a very early date, when the tin plate scale will be arranged. No changes were made in the prices in the scale submitted by the Amalgamated Association, but it is possible a few minor changes may be made in the foot notes. The sheet mill scale has been signed for the American Sheet Steel Company and also the tin plate scale by the American Tin Plate Company, in so far as the wage rates are concerned, but a conference is necessary in order to adjust the foot notes.

THE LETTER BOX.

Inquiries in regard to practical questions of general interest are invited, in reply to which we shall be glad to receive suggestions and information from our readers.

Correspondents are requested in all cases to give their names and addresses, which will not, however, be published or disclosed without their consent.

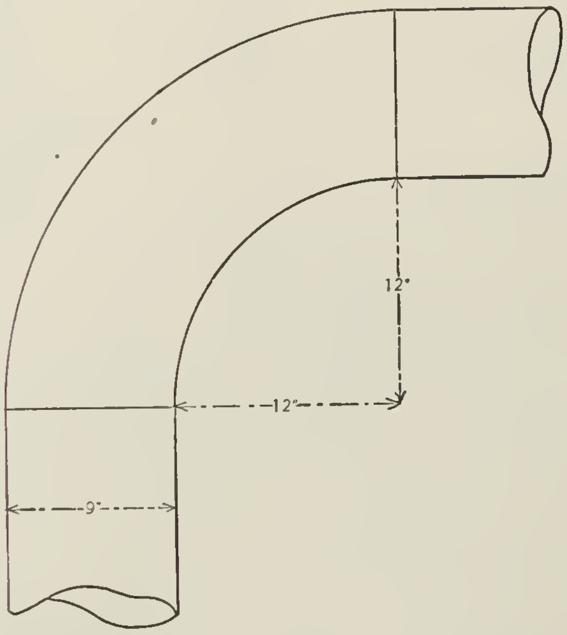
PATTERN FOR CURVED ELBOW.

From E. K., Philadelphia, Pa.—Will you please inform me through the columns of *The Metal Worker* how to obtain the patterns for a five-pieced 90-degree elbow, 2 inches in diameter, curved both in plan and elevation?

Answer.—The problem which our correspondent presents is an interesting one both in projections and developments. In this case, however, we would suggest that for a small elbow of the size given he use what is known to the trade as an adjustable elbow, which can be purchased from dealers, and which is indispensable in putting up pipes where odd turns or angles are to be fitted, as in our correspondent's case.

LAYING OUT AN ELBOW OR CURVE OF GIVEN RADIUS.

From G. H. G., Fall River, Mass.—I have received much valuable information from the columns of *The Metal Worker*, and would like to have some one explain the best way of laying out an elbow, or turn, of a given radius, such, for example, as that indicated by the sketch inclosed. The architects of the mills in this city, in drafting conductor pipe, give us the radius on which the elbows shall turn, and I want to see if there is any better way of laying out the work than mine, which is represented by the sketch.



THE METAL WORKER

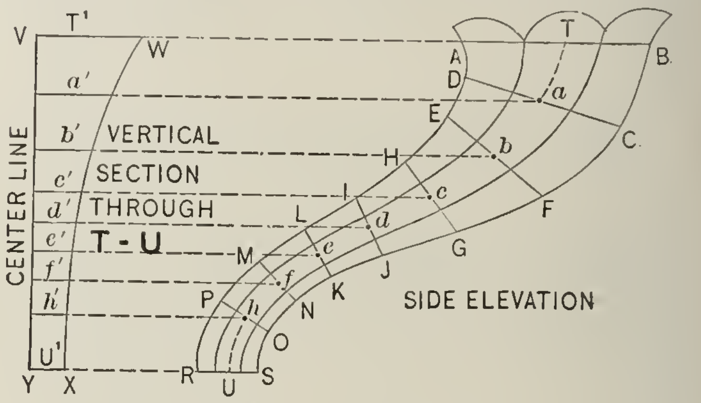
Laying Out an Elbow or Curve of Given Radius.

PATTERN FOR A CORNUCOPIA.

From J. H. T., New York.—I should be glad if *The Metal Worker* would give a practical design of a cornucopia to be made from sheet metal, and also the rules for obtaining the pattern?

Answer.—In the accompanying sketch a section anywhere on one of the lines, as H G, is a polygon. Our correspondent's question presents an interesting study in projections and developments, the principles of which are clearly set forth in the pattern problem entitled "Ship's Funnel from Lateral Pieces," published in *The Metal Worker* of September 1 and 8, 1900.

In the accompanying illustration is shown a practical design of a cornucopia, wherein the lines A B and R S run parallel. In applying to the cornucopia the principles shown in the above mentioned issues proceed as follows: First draw the outline of the cornucopia, as shown by A B S R; also a vertical section through the center of the side elevation, as T U, as shown one-half by V W X Y. This vertical section is obtained by making the distance V W and X Y equal to T B or T A and U S or U R, respectively, in side elevation. Draw at pleasure the curved line X W in section. Next divide the curves A R and B S into an equal number of spaces and draw the planes D C, E F, G H, I J, K L, M N and O P, all of which bisect, and obtain the centers *a*, *b*, *c*, *d*, *e*, *f* and *h*, respectively. From these centers draw lines parallel to A B intersecting the half section at *a'*, *b'*, *c'*, *d'*, *e'*, *f'* and *h'*. Then will the lines shown in side elevation represent the length of the true sections which must be constructed, while similarly lettered lines in the half sections will represent the half widths of the true section.



THE METAL WORKER

Pattern for Cornucopia.

With these points of information and with the necessary rules given in the above mentioned issues of *The Metal Worker*, our correspondent should find no difficulty in solving this problem.

SHOULD USE LARGER SUCTION PIPE.

From J. K. R., Pittsfield, Mass.—Having read the letter of "N. H. B." in *The Metal Worker* of June 14, I would suggest that his pump would work easier if a larger suction pipe was used, as the friction in a pipe 100 feet long will amount to considerable. I would say that it ought not to be less than 1½ inches for so long a distance. Then, if the pump is tight, it will lift the water the 16 feet and overcome the friction in the long pipe. If the lift is more than 16 feet and the small pipe is used there can be no doubt that the pump will have to be in good working order, and it will take some muscle to operate it. Otherwise, there is nothing in the arrangement to interfere with successful operation. A better grade of pump might be more satisfactory.

INTERSECTION BETWEEN COLLAR AND CYLINDER.

From E. K., Philadelphia, Pa.—It would please me very much if you would show me through the columns of *The Metal Worker* how to obtain the correct length for a 45-degree collar with seam at the side intersecting a cylinder.

Answer.—On page 47 of *The Metal Worker* of April 12, 1902, is shown a problem entitled "Patterns for Intersecting Pipes," in which the principles are explained for obtaining the true length and intersections, and which can be applied to our correspondent's problem.

◆

The wage scale of the Amalgamated Association was signed last week by the Republic Iron & Steel Company, and it is expected most of the mills of that concern in the Central West and South will run right through the summer months, as the concern are very much crowded with orders. It is possible a few of the plants will be closed down for a short time for necessary repairs and stock taking.

Alexander C. Humphreys of the firm of Humphreys & Glasgow, New York and London, has been elected president of the Stevens Institute of Technology, Hoboken, N. J., in succession to the late Dr. Henry Morton.

TRADE REPORT.

MARKET SUMMARY.

Pig Tin has declined about 1c. in price and is weak and dull.

Copper is dull and declining.

Pig Lead is unchanged and quiet.

Spelter remains strong, with spot metal scarce.

Antimony is unchanged.

Nickel is in good demand and without change in price.

Aluminum is firm and in good demand.

Tin Plates are quiet, with prices unchanged.

Sheets are very firm in price and with good demand for the heavy gauges of Black.

Old Metals are rather dull and weak.

Foundry Iron gets scarcer every day, with prices extremely strong and high.

Sheet Copper is in good demand, with prices firm.

Sheet Zinc is without change.

Hardware is less active on approach of summer dullness; prices rule firm.

Cast Iron Sinks have been advanced 15 per cent. in price, and all Cast Iron Goods are expected to undergo similar advance.

Malleable Fittings are slightly higher in price, Malleable Unions being up 5 per cent.

Tarred Roofing Paper has been advanced 3c. per roll.

Nuts were advanced 2.10c. to 3.10c. per lb. June 17.

Wire Nails are in good demand and better supply; prices unchanged.

Cut Nails are not so active, and prices remain firm.

Window Glass is dull and market unsatisfactory.

White Lead is not so active; prices remain unchanged.

Linseed Oil is in fair demand, with prospect of further advance in price.

Spirits Turpentine continues strong in price, with limited business.

METAL MARKET.

New York, June 20, 1902.

Pig Tin.—A sharp decline in Pig Tin set in at the beginning of this week, as a result of the heavy arrivals here and a sharp break which occurred in London. The reason given for the sudden drop in London is that the manipulators there have found out that America will not be a supporting power in the future. Consumers here are well supplied, and the time of the year for the closing of mills for repairs is at hand. Shipments from the Straits for the first half of this month were very large, being 500 tons greater than for the same period of last year. It is expected that they will continue on a heavy scale for some time to come. At the close the market was weak and dull, consumers being indifferent, with little or no speculative business. Straits Pig in small lots rules at about 1c. per lb. below the prices of a week ago, being quoted at 30c. to 30½c.

Copper.—The market has been extremely dull, with prices constantly declining, consumers buying nothing, in anticipation of the summer shut down, and in view of the fact that their previous prices have been rather heavy. A sharp decline is noted in the wholesale price of Lake Copper. The market at the close was dull, with an easy tone. Jobbers quote Lake Ingot in small lots at about 13c. to 13¼c. per lb., and Casting Copper at 12¾c. to 13c.

Sheet Copper.—The demand for Sheet Copper keeps up in fairly large volume, although orders are scarcely as heavy as they have been in the past few weeks. Prices continue firm and unchanged on the basis of 18c. per lb. from store.

Pig Lead.—There is no change to be noted in this market. Quiet conditions prevail, and prices are steady at the figures ruling for some time past. American Pig in small lots is quoted at 4.45c. to 4½c. per lb. St. Louis advices indicate that the volume of transactions in the market for Pig Lead at that center is limited, and the fluctuation in prices insignificant.

Spelter.—The market for Spelter remains very firm for spot. Only a small business was reported, however, as consumers are evidently not buying beyond the limit of their actual needs at present prices. Jobbers are asking about 5¼c. to 5½c. per lb. for small lots of good Western brands. St. Louis advices report that the situation in the Spelter market shows no material change. The curtailment in production due to strikes at the smelters will, it is said, be quite seriously felt when any urgent demand may come into the market. It is said that, owing to the limited offerings, a liberal premium is being paid for July delivery.

Sheet Zinc.—The demand for Sheet Zinc is of the usual proportions, and prices are unchanged at 6¼c. per lb. for 600-lb. cask lots and 6¾c. to 7c. for smaller quantities.

Antimony—Is unchanged. Hallett's in small parcels is quoted at 8⅝c. to 8¾c. per lb.; U. S. at 8⅜c. to 8½c., and Cookson's at 10¼c. to 10¾c.

Nickel.—There is no change in the market for this metal. Small lots are quoted at about 55c. per lb.

Aluminum.—The demand continues active and prices are without change. Small lots of No. 1 Ingot guaranteed 99 per cent. pure are quoted at 37c. per lb., and 100-lb. lots at 35c.

Tin Plates.—Nothing new has been developed in this market, which is unchanged from the conditions prevailing for several weeks past. New business is rather light, and prices have not varied to any quotable extent. The American Tin Plate Company are quoting for delivery until October 1 at the prices ruling for some time past. American Bessemer Coke Plates, IC, 14 x 20, in moderate sized lots delivered at New York or corresponding points, are quoted by jobbers at about $4.75 to $4.90 per box. A decline of 1½ pence, to 13 shillings 6 pence per box, in the price of Welsh Plates occurred this week.

Sheets.—The demand for the heavier gauges of Sheets up to Nos. 18 and 20 is heavy, and the mills are well filled up with orders on this class of material. On the lighter gauges, however, the demand has fallen off materially. It is said that some of the independent mills are naming slightly lower prices on the lighter gauges of Sheets for delivery in the second half of the year. Considering the season, the demand for Sheets keeps up in excellent volume. The mills have about all the business they can well take care of. Jobbers quote No. 27 One Pass Cold Rolled Soft Steel Sheets at about 3.75c. to 3.80c., and No. 24 Galvanized at 4c. to 4.20c.

Chicago advices are as follows: There have been freer offerings by independent mills, and although there has been a fair demand the market has been weaker, especially for Galvanized Sheets, which have sold at lower prices, although there has been no change in the net quotations made by the combination. The system of discount is still adhered to by the independent mills. Small lots of No. 27 Black Sheets from store are quoted at 3.45c. to 3.55c., and Galvanized Sheets at 4.70c. to 4.75c.

Old Metals.—The demand for Scrap Iron is active, and prices are firm; but other Old Metals, notably Brass and Copper, are rather dull and inclined to weakness. Dealers are paying about the following rates for moderate sized lots, delivered at New York or corresponding points:

Heavy Copper	per lb. 10 c.
Light and Tinned Copper	per lb. 9 c.
Heavy Brass	per lb. 8 c.

Light Brass	per lb. 6½c.
Lead	per lb. 3⅝c.
Tea Lead	per lb. 3 c.
Zinc	per lb. 2⅞c.
Pure Aluminum Sheet	per lb. 22 c.
Cast Aluminum	per lb. 17 c.
No. 1 Pewter	per lb. 18 c.
No. 2 Pewter	per lb. 9 c.
Tin Plate Scrap, per gross ton	.... to $5.00
Wrought Iron Scrap, per gross ton	$13.00 to 13.50
Heavy Cast Scrap, per gross ton	12.00 to 12.50
Stove Plate Scrap, per gross ton	8.50 to 9.00
Burnt Iron, per gross ton	7.00 to 7.25

THE PIG IRON MARKET.

New York.—The scarcity of Pig Iron has been aggravated, so far as this territory is concerned, by the Anthracite Coal strike, which has forced a number of furnaces in the Schuylkill and Lehigh valleys to bank, and has been increasing the percentage of off Iron made by those which have continued in operation. Sellers are at their wits ends to meet the requirements of their customers, and some are parceling out small importations of Scotch Pig. There is some inquiry for 1903 delivery, but except in those cases in which usual contracts for a whole year's requirements are closed little appears to have been done. Some of the leading makers are discouraging buying at present prices for 1903 delivery, while others are willing to book some orders close to the present range. Quotations for summer delivery are as follows: Northern Iron, at tidewater, No. 1 X, $22.50 to $23; No. 2 X, $21.50 to $22; No. 2 Plain, $21 to $21.50. Tennessee and Alabama brands are quoted as follows: No. 1 Foundry, $21.75 to $22; No. 2 Foundry, $20.75 to $21.25; No. 3 Foundry, $20.25 to $20.50.

Chicago.—The result of the stringent market for Pig Iron is an advance of 50c. per ton on all Southern Iron for future delivery. Northern Iron, too, is tending upward strongly. Iron for immediate delivery is becoming scarcer each week, and it is almost impossible to give reliable quotations, it being a question of delivery and not of price. The little Iron of this character that is being sold commands from $2 to $3 per ton over the prices current for future delivery. With the extension of the strike among the Coal miners, the outlook for an adequate supply of raw material to the consumer of Pig Iron is assuming a more serious aspect. It is asserted that a number of furnaces will go out of blast within a few days, which fact, with the many furnaces already banked, causes uneasiness, if not alarm, among foundrymen. The scarcity, with higher prices, of Coke is also an important feature in the market at the moment. We quote as follows:

Lake Superior Charcoal	$24.00 to $25.00
Local Coke Foundry, No. 1	22.50 to 23.00
Local Coke Foundry, No. 2	21.50 to 22.00
Local Coke Foundry, No. 3	21.00 to 21.50
Local Scotch, No. 1	22.00 to 23.00
Ohio Strong Softeners, No. 1	24.00 to 24.50
Southern Silvery, according to Silicon	22.65 to 24.65
Southern Coke, No. 1	22.15 to 22.65
Southern Coke, No. 2	21.65 to 22.15
Southern Coke, No. 3	21.15 to 21.65
Southern Coke, No. 1 Soft	22.15 to 22.65
Southern Coke, No. 2 Soft	21.65 to 22.15

Philadelphia.—There is greater scarcity of Pig Iron now than at any time on record. Price has nothing to do with it, the only point is to find the Iron, and when that is done there is no difficulty in arranging prices. For July and August shipments of No. 2 X Foundry, prices rule from $22 to $22.50, and for the last quarter of the year, $21.25 to $21.75. Sellers are not seeking business, being already sold pretty well to their full limit. Some business has been entered for the first half of 1903 at prices ranging from $20.75 to $21.25 for No. 2 X Foundry, but makers now quote more money. It appears as though there will be no material change in the market for several weeks to come. The following are the quotations for Pig Iron for city and nearby points, for delivery during the last quarter of the year; July, August and September deliveries being from 50c. to $1 more money:

No. 1 X Foundry	$23.00 to $23.50
No. 2 X Foundry	21.50 to 21.75
No. 2 Plain	20.75 to 21.25

Pittsburgh.—The Pig Iron market has been quiet during the week, the furnaces being practically sold up for the next four to six months, and buyers pretty well covered. The recent strike at the furnaces took about 75,000 tons of Iron out of the market, making the scarcity of metal keener than ever. Furnace operators are giving their attention to filling old contracts for Iron in preference to making new noes. The market is very strong. No. 2 Foundry is quoted at $21 to $21.50, Pittsburgh.

Cincinnati.—The strike in the Coke regions is having a depressing effect on the Pig Iron market, and prices are higher as a consequence. Very little spot Iron is offered, many of the Southern furnaces being entirely withdrawn from the market. The market for spot Iron is irregular, although the general idea seems to be that $17.50 to $18, Birmingham, for No. 2 Foundry is as near the actual value as can be determined. We quote, f.o.b. Cincinnati, as follows:

Southern Coke, No. 1	$21.00 to $21.25
Southern Coke, No. 2	20.50 to 20.75
Southern Coke, No. 3	20.00 to 20.25
Southern Coke, No. 4	19.50 to 19.75
Southern Coke, No. 1, Soft	21.00 to 21.25
Southern Coke, No. 2 Soft	20.50 to 20.75
Ohio Silvery, No. 1	24.10 to 24.35
Ohio Silvery, No. 2	23.60 to 24.10
Lake Superior Coke, No. 1	24.60 to 25.10
Lake Superior Coke, No. 2	24.10 to 24.60
Lake Superior Coke, No. 3	23.60 to 24.10

St. Louis.—Transactions in the Pig Iron market have been on a moderate scale. Offerings of Iron are distinctly lighter and prices moving to a higher level. While the market is very quiet now it would seem that it cannot remain so very long, as it is coming to the time when many foundry interests will come into the market for future requirements, and unless a more liberal supply of material than now can be offered it would seem that a general stiffening in prices would come about. The following is the range of prices current for cash, f.o.b. St. Louis:

Southern, No. 1 Foundry	$20.25 to $22.50
Southern, No. 2 Foundry	19.50 to 21.75
Southern, No. 3 Foundry	19.00 to 21.25
Southern, No. 4 Foundry	18.50 to 20.75
No. 1 Soft	20.00 to 22.25
No. 2 Soft	19.50 to 21.75

CHICAGO REPORT.

Scrap Iron and Steel.—The offerings have not been large, but ample, and the market has remained steady for all kinds of Scrap, with a fair outlet through the mills. We quote dealers' prices for carload lots, Chicago delivery, as follows:

	Per net ton.
Country Wrought Scrap	$14.00 to $14.50
Machinery Cast	.... to 13.00
Malleable Cast	12.00 to 12.50
Stove Plate (free from burnt)	.... to 9.50
Burnt Iron and Grate Bars	8.00 to 9.00
Sheet Iron and Hoops	8.00 to 9.00
Plow Steel	12.00 to 13.00
Breaking Stock	.... to 11.00
Old Boilers—whole (Iron)	9.50 to 10.00
Old Boilers (Iron) cut in single Sheets and Rings	12.00 to 12.50
Old Gas Pipes and Boiler Tubes	12.00 to 12.50
Cast Borings	8.50 to 9.00
Turnings	12.00 to 12.50
Horseshoes	14.00 to 14.50

Old Metals.—The market for both Copper and Brass has been easy with freer offerings, and only a moderate demand, as consumers are disposed to purchase Ingot Copper rather than old material at the present prices. Lead and Zinc have been better sustained with a fair demand. The following prices are being paid by dealers in this market:

	Per lb.
Copper Wire and Heavy	11 c.
Copper Bottoms	10 c.
Copper Clips	11 c.
Red Brass	11 c.
Yellow Brass	8¼c.
Red Brass Borings	10 c.
Yellow Brass Borings	7½c.
Light Brass	7 c.
Pipe Lead	3.70c.
Tea Lead	3.35c.
Zinc	3⅛c.
Tin Foil	22 c.
Pewter, No. 1	19 c.
Pewter, No. 2	11 c.
Aluminum	20 c.

Old Rubber.—The offerings of Rubber Shoes have increased, and with but little outlet, the market is weaker and prices are fractionally lower. Other kinds have remained steady. The following are the prices paid by dealers in this market:

	Per net ton.	Per lb.
Garden Hose	$25.00	.....
Air Brake Hose	42.00	.....
Rubber Shoes	....	7 c.
Rubber Car Springs	....	5 c.

Inside Bicycle Tubing	22 c.
Outside Tubing	6 c.
Black Rubber	4 c.
White Rubber	8½c.

Rags.—There has been a slow and easy market, but prices have been without essential change. Dealers continue to buy at 70c. to 75c. per 100 lbs., Chicago delivery.

Anthracite Coal.—The situation in the Coal fields is without improvement, and dealers in this market have confined their energies to the fulfillment of previous contracts. While a strong tone prevails prices remain unchanged, subject to a discount of 30c. per ton for shipments made during the month of June:

	Grate.	Egg and Stove.
Chicago	$5.75	$6.00
Milwaukee, Wis	5.75	6.00
St. Louis	6.20	6.45
Kansas City, Mo	8.25	8.50

THE HARDWARE TRADE.

In the midst of the continued pressure of current business there are many indications of the presence of the summer months, when trade relaxes its demands and the activities connected with the producing and the marketing of goods are perhaps as much interrupted as at any time in the year. The manufacturers are preparing for the stoppage in whole or part of their factories for the purpose of making repairs, overhauling machinery and perhaps increasing their facilities. The pressure of business, therefore, is such that there will not be any longer interruption of production than is necessary, and some of the manufacturers will gladly avail themselves of the opportunity to repair broken stocks and accumulate something of a supply for the fall business. This is a season when the orders from the large trade are light, many buyers having already placed orders to cover their requirements. Labor agitations will probably attract some attention, and business is already somewhat disturbed by the coal strike, both in its interference with the supply of fuel and in the restlessness which is connected with it. Wages in many lines in which skilled workmen are employed are higher than a year ago, and the tendency is gradually upward. This fact, with the condition of the market in the raw material, gives firmness to prices. Many kinds of heavy goods are decidedly scarce and held at high figures. Trade throughout the country is moving along in excellent volume. The promise of the crops is such as to cause no general solicitude, with a good prospect that their abundance on the whole will lay a foundation for continued good times. One penalty of the prosperity which prevails here, with its natural accompaniment of high prices, is the falling off in the volume of exports in certain lines. While some manufacturers are wise enough to take a broad view of the situation and take care of foreign business even to the neglect of some urgent calls from the home market, others are apparently sacrificing their interests in export trade, as they are failing to make the most of connections already established with foreign houses. A wiser policy, however, prevails in the counsels of others, and in general it is to be said that manufacturers are using enterprising and energetic measures to extend their trade relations in the markets of the world.

NOTES ON PRICES.

Cast Iron Sinks.—Cast Iron Sinks were advanced in price this week. The manufacturers announced, on the 16th inst., new prices, which show an advance of 15 per cent. upon the previous quotations. The scarcity and high price of Coal and Pig Iron are said to be the reasons for the change. The trade may expect a similar advance in the price of all goods of a similar nature, such as Cesspool Bell Traps, Stable Cesspools, Sidewalk Grates, Slop Hoppers and Traps, and Stop Cock Boxes.

Malleable Fittings.—The manufacturers of Malleable Fittings announced new prices on the 13th inst. The prices show a slight advance on some of the smaller sizes of Fittings sold on the pound list, and an advance of 5 per cent. on Black and Galvanized Malleable Unions. It is noticed that the new prices were issued only by the concerns mentioned as being interested in the proposed consolidation of manufacturing and jobbing interests. The condition of the market, however, is such as to warrant the adoption of the new quotations by all firms manufacturing the sizes of Fittings affected.

Plumbers' Marble.—The settlement of the labor troubles of the local Marble yards has brought relief to the plumbing trade. The local jobbing houses have been put to considerable trouble in procuring Marble with which to fill their orders for stock sizes. The few houses which carry stocks of Marble Slabs insisted upon premium prices for pick up orders. It was impossible to get special Slabs. owing to the fact that all out of town yards are away behind with their orders for Architectural Marble. The principal Marble interest in the United States are said to be more than 25,000 Plumbers' Slabs of stock sizes behind in their orders.

Berger Bros. Company, Philadelphia, Pa., announce that, owing to the very heavy advance in raw materials, they are compelled to change the discount on Shanks and Circles to 15 per cent. to the trade; terms as usual. The retail price is at the net list figures.

Cast Iron Soil Pipe.—We are advised by Haines, Jones & Cadbury, Philadelphia, that the figures on Medium Pipe, given in our last week's note, are incorrect, so far as Philadelphia is concerned. The price in less than carload lots, they say, is 21 cents per foot for 4-inch Medium Pipe, Single Hub, and 22 cents for Double Hub 4-inch Medium Pipe.

Tarred Roofing Paper.—Prices on Tarred Roofing Paper are changed somewhat in several sections of the country, including New England and parts of Pennsylvania and Maryland. The change involves an advance of about 3 cents per roll on Two and Three Ply Tarred Roofing Paper, making the prices 58 and 80 cents per roll, instead of 55 and 77 cents, as formerly.

Nuts.—A meeting of the manufacturers of Nuts was held at Atlantic City on Tuesday, and an advance of 2-10 cent per pond was made in the prices of Cold Punched and Hot Pressed Square Nuts, and an advance of 3-10 cent per pound in both Cold Punched and Hot Pressed Hexagon Nuts. The manufacturers united in giving gratifying reports in regard to the volume of business, and the prospect of a continuance of satisfactory conditions.

Follansbee Brothers Company, Pittsburgh, Pa., sent out under date of June 12 a new price-list of the high grade Roofing Plates which they manufacture, also Bright Plates, Sheet Zinc, Black and Galvanized Sheets, Stove Pipe Material, Wood's Refined Smooth Iron Sheets and Patent Planished Iron, Wellsville Polished Steel Sheets and Steel and Galvanized Roofing, Siding and Ceiling, and Galvanized Ridge Roll. The prices named by the company should be attractive to the trade.

C. W. Evans Steel & Iron Company, Cincinnati, Ohio, are sending out a circular announcing a special sale of goods, among which is Galvanized Pump Chain, which is offered at $3.80 per 100 pounds, f.o.b. cars, Pittsburgh, in full barrel lots.

Wire Nails.—The business in Wire Nails in the New York market is of good proportions, owing to the amount of building under way. The statement is made in the daily papers that there are 2365 buildings in course of construction in the Borough of Manhattan alone. Supplies from mills are coming in more freely, and prices are unchanged, small lots from store being quoted at $2.30 per keg.

Cut Nails.—The smaller demand for Cut Nails has relieved the situation somewhat, although difficulty is still experienced in getting prompt shipments of Iron Nails from mills. The local demand is of fair proportions. Small lots of Cut Nails from store are quoted at $2.30 per keg.

Window Glass.—The demand for Window Glass continues quiet. The Associated Jobbers' quotations are unchanged. Glass purchased at low prices and lack of demand preclude the advisability of an advance by the jobbers on the present unsatisfactory market. Single and Double Strength Glass from store is quoted at 89 per cent. discount.

White Lead.—The demand for White Lead in Oil continues fair, although there is a perceptible falling off in the size and number of orders. Small lots of White Lead in Oil from store are quoted at 6½ to 6¾ cents per pound.

Linseed Oil.—The current demand for Linseed Oil is confined to small lots, large buyers not placing orders. There is some talk among the trade of the possibility of an advance before the beginning of next month, the figures named being 70 cents per gallon for City Raw. Prices are unchanged from those given last week, City Raw, in small lots, being quoted at 67 to 67½ cents per gallon.

Spirits Turpentine.—Owing to the strength developed at Southern points, the local Turpentine market continues strong at last week's quotations. Business is on a limited scale, owing to the high prices. Turpentine in small lots is quoted at 50 to 50½ cents per gallon.

TRADE NOTES.

The Kilbourne & Jacobs Company, Columbus, Ohio, have increased their capital stock from $1,125,000 to $1,250,000.

The Hewitt Mfg. Company, Chicago, are about to erect a Brass foundry on a site, 40 x 100 feet, at the corner of Emerald avenue and Fortieth street. The plant will cost about $100,000.

Two large sized postal cards sent out by the Grasselli Chemical Company, Cleveland, Ohio, advertise in an artistic manner their Eureka Soldering Flux, which is especially recommended to the attention of tinsmiths and others using Solder.

A card is being sent through the mails by the Joseph Dixon Crucible Company, Jersey City, N. J., which gives a picture of the new Hotel Astor, now being erected in New York City, with the information that the steel structural work of the building is being protected with Dixon's Silica Graphite Red and Green Paint.

The Roseberry Zinc Company, with principal office at 525 Main street, East Orange, N. J., have been incorporated with a capital stock of $200,000 by C. V. Childs, George T. Mills and H. N. Smith to manufacture Zinc.

The Tucker Tool & Machine Company were recently incorporated and are carrying on a business in Factory and Mill Supplies at 135 Greenwich street, New York. The officers are M. E. Stone, president and treasurer, and C. H. Tucker, Jr., general manager. This is a continuation of the business carried on by C. H. Tucker, Jr., since 1885. The company will continue to act as agents for the Wiley & Russell Mfg. Company, Welding Compound Company, Anderson Pipe Cutter Company, the Crosby Hack Saws and other leading lines.

The Atlas Paint & Specialty Company, 433-435 Pearl street, Cincinnati, Ohio, are successors to the Frank Happell Mfg. Company, manufacturers of high grade Paint Specialties. Jet-E-nam, their principal brand, is an enamel for producing a permanent jet black on bicycles, radiators, ranges, stove pipes, mantels and grates, and, it is claimed, is not affected by heat or cold. The company report an excellent demand for their various specialties.

The J. A. Harps Mfg. Company, Greenfield, Ohio, are now manufacturing the Never Fail Can, having purchased the interest of the former maker, C. W. Price. The Can is designed for oil or gasoline, a peculiar feature in its construction being that the oil does not touch the inside of the Can pump.

The St. Louis Enameling Company of Ninth and Monroe streets, St. Louis, want bids on their Malleables for the coming season.

The Coe Brass Mfg. Company, Ansonia, Conn., are using a new process for extruding metals, by which they will make bars of Malleable Brass, Alloys, Manganese Bronze, &c. The process consists of forcing the heated metal by hydraulic pressure through a die of any desired shape. Extruded Bars can thus be made ranging from the lightest sections to heavy Round, Square or Hexagon Bars. The Extruded Metal can be used in many kinds of structural work where a strong rustless metal is desired.

The Providence Aluminum Company, Providence, R. I., are operating a jobbing Aluminum and Brass foundry and workshop. They have turned out Aluminum Bronze Castings weighing as much as 380 pounds.

The Dayton Hardware Company, Portland, Ore., are offering their device for killing and removing insect pests from houses, sanitariums, hospitals, hotels, &c. The insect is killed by simply pushing their killer against it when resting on the ceiling or wall, and can be easily shaken off. It is killed, it is remarked, without being crushed and without soiling the most delicate wall or paper.

W. A. Slocum, who for some time past has been a traveling salesman for the Aluminum Mfg. Company of Two Rivers, Wis., has gone into partnership with Oscar Wurlitzer. The firm have opened an Aluminum store at 613 Wells street, Chicago.

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ROOFING SUPPLIES, METALS, TIN PLATES, &c.

REVISED JUNE 20, 1902.

Aluminum—

No. 1 Aluminum (guaranteed over 99% Pure), in ingots for remelting.

Small lots ⅌ ℔, 37¢

100-℔ lots ⅌ ℔, 35¢

Aluminum Sheet, B. & S. gauge. In lots of 50 ℔s or more.

Wider than	6-in.	14-in.	24-in.
And including	14-in.	24-in.	30-in.
	⅌ ℔	⅌ ℔.	⅌ ℔.
Nos. 18 to 19	$0.42	$0.44	$0.47
" 20	.44	.46	.49
" 21 to 23	.46	.48	.51
" 24	.46	.50	.53
" 25	.47	.51	.54
" 26	.47	.54	.59
27	.48	.57	.62
28	.48	.57	.64
29	.49	.60	.69
" 30	.50	.64	.77

Note.—Lots of less than 50 ℔s 5¢ ⅌ ℔ extra.

Antimony—

Cookson ⅌ ℔. 10¼@10¾¢

Hallett's ⅌ ℔, 8⅜@8¾¢

U. S ⅌ ℔ 8⅜@8½¢

Brass, Roll and Sheet...... 30%

Conductors—

Corrugated.

Round or Square.—

Galvanized ½ or more. N'st'd......70&10%

" Not Nested......70&5%

" Plain Round, ½ or more, Nested......70&10%

Galvanized, Plain Round, Not Nested. 70&5%

Spiral Lock Seam Pipe—

Galvanized...... 60@60&10%

Spiral Riveted.

Galvanized......40%

See also *Elbows and Shoes; Eave Trough Miters; Strainers, Conductor.*

Conductor Strainers—

See *Strainers, Conductor*

Copper—

Lake Ingot......13 @13½¢

Casting......12¾@13 ¢

Sheet and Bolt......18¢ ⅌ ℔ basis

Cold Rolled Sheets......19¢ ⅌ ℔ basis

Cold Rolled and Polished Sheets...... 20¢ basis

Planished Sheets......21¢ basis

Bottoms, Pits and Flats....⅌ ℔ 22¢ basis

Eave Trough Galvanized

Territory	L. C. L.
Eastern	75&10%
Central	75&7½%
Southern	70&12½%
S. Western	70&10%

Terms, 2% for cash.

Eave Trough Mitres—

Lap or Slip Joint......list, 25%

Elbows—Plain Adjustable—

Eastern List.

Tin......30%

Galvanized......30%

Perfect Elbows......40%

Stove Pipe—

Four-Piece

	4	4½	5	5½	6-inch.
No. 1.	$0.80	.85	.90	1.00	1.05 per doz.
No. 2.	.65	.70	.75	.80	.85 "
No. 3.	.60	.63	.65	.70	.80 "

Elbows and Shoes—

Galvanized......60%

Gasoline—

See *Petroleum Products.*

Iron Sheet—*Black.*

	One Pass, C. R. Soft Steel.	R. G. Cleaned.
Nos. 14 to 16	⅌ ℔, 3.40	3.45¢
Nos. 18 to 21	⅌ ℔, 3.50	3.55¢
Nos. 22 to 24	⅌ ℔, 3.60	3.65¢
Nos. 25 and 26	⅌ ℔ 3.70	3.75¢
No. 27	⅌ ℔, 3.80	3.85¢
No. 28	⅌ ℔, 3.90	3.95¢

Russia, Planished, &c.

Genuine Russia, according to assortment......⅌ ℔ 11@14 ¢

Do. Stained...... 6@10½¢

Patent Planished. ⅌ ℔ A, 11¢: B, 10¢ net

Galvanized.

Nos. 14 and 16......⅌ ℔ ...3.45@3.60¢

Nos. 18 and 20......⅌ ℔, ...3.70@3.90¢

Nos. 22 and 24......⅌ ℔, ...4.00@4.20¢

No. 26......⅌ ℔, ...4.25@4.50¢

No. 27......⅌ ℔, ...4.55@4.80¢

No. 28......⅌ ℔, ...4.85@5.10¢

No. 30......⅌ ℔, ...6.00@6.30¢

No. 20 and lighter, 36 inches wide, 25¢ higher.

Lead—

American Pig......4.45@4½¢

Bar......5@5½¢

Pipe......6½¢......20% off

Tin Lined Pipe......12½¢......20% off

Block Tin Pipe......42½¢......20% off

Sheet Lead......7¼¢......20% off

Old Lead in exchange, 3¼¢ ⅌ ℔.

Mitres Eave Trough—

See *Eave Trough Mitres.*

Nickel—

Per ℔......55@60¢

Paints Oils &c.—

Leads—

Lead, American White, in Oil;

Lots of 500 ℔ or over......6¼ @ 6½

Lots less than 500 ℔......6½ @ 6¾

Lead, White, in oil, 25 ℔ tin pails, add to keg price...... @ ½

Lead, White, in oil, 12½ ℔ tin pails, add to keg price...... @ 1

Lead, White, in oil, 1 to 5 ℔ assorted tins, add to keg price...... @ 1½

Lead, White, Dry in bbls......5¾ @ 6

Lead, Red, bbls., ½ bbls. and kegs:

Lots 500 ℔ or over...... @ 6

Lots less than 500 ℔...... @ 6½

Oils—

Linseed, City, raw......⅌ gal...67@67½¢

Linseed, City, boiled......69@69½¢

Linseed State and West'n, raw 66@66½¢

Spirits Turpentine—

In Southern bbls......50 @50½¢

In machine bbls......50¾@51¼¢

Putty—

In bulk......$1.25

In bladders...... 2.25

In cans 12 ℔ to 25 ℔...... 2.25

In cans 1 ℔ to 5 ℔...... 3.25

Petroleum Products—

In Barrels (Barrel Included)

Stove Gasoline......⅌ gal. 10½@11¢

Kerosene......⅌ gal. 12@13¢

Pipe Drain......40%

Pipe, Spiral—

See *Conductors.*

Registers—

List Sept. 2, 1901.

Black Japanned......70%

White Japanned......70%

Nickel Plated......70%

Bronze Finishes in Imitation of Gold, Silver, Copper or Bronze......70%

Electroplated in Brass, Bronze or Copper......70%

White Porcelain......60%

Solid Brass and Bronze Metal......50%

Roofing Material—

1 Ply Tarred Paper, ⅌ ton.$31.00@32.00

2 Ply Tarred Paper...⅌ roll, 108 sq. ft. 55@60¢

3 Ply Tarred Paper..⅌ roll, 108 sq. ft. 80@85¢

Slater's Felt......⅌ ton, $35.00@36.00

Roofing Pitch......⅌ bbl. $2.50

Rosin—

Common and Good—Strained.

Rosin, C. & D......⅌ bbl. $1.62½@$1.65

Rosin, E. & F......⅌ bbl. 1.70 @ 1.75

Rosin, G. & H......⅌ bbl. 1.80 @ 1.85

Rosin, I. & K......⅌ bbl. 2.10 @ 2.70

Rosin, M. & N......⅌ bbl. 3.05 @ 3.55

Shoes and Elbows—

See *Elbows and Shoes.*

Slate Roofing—

f. o. b. cars, Quarry Station. According to size.

Pennsylvania:

Best Bangor, ⅌ sqr......$3.25@$5.00

No. 1 Bangor Ribbon, ⅌ sq 3.25@ 3.50

Pen Argyle, ⅌ sqr...... 3.25@ 4.00

Peach Bottom, ⅌ sqr...... 5.25@ 6.10

No. 1 Chapman, ⅌ sqr......3.50@ 4.35

No. 1 Penna. Black......$2.75@3.80

Unfading Washington Bangor...... $2.25@4.25

Vermont:

Sea Green, ⅌ sqr......$2.00@$3.40

Purple, ⅌ sqr...... 4.25@ 4.75

Unfading Green, ⅌ sqr... 3.50@ 4.50

Red, ⅌ sqr...... 6 50@10.50

Maine:

Brownville, Unfading Black, No. 1......$5.00@7.20

Solder—

½&½ guaranteed......20 @20½¢

No. 1......17½@19 ¢

Prices of Solder indicated by private brands vary according to composition.

Soldering Fluids—

	Per Pound. Barrels	Per Pound. Smaller Q'ntities
Concentrated Flux	4c	5c
Eureka Flux:		
Triple Strength	3c	3½c
Extra Concentrated	4½c	5c
Crystal	..	7c
Gedney's Fluid	2c	2c
Lennox Fluid	2c	3c
Perfection Flux	3c	3½@1c
Yager's Salts, 1 lb. bottles		each, 50¢
5 lb. bottles, per lb., 45¢		

Soldering Coppers—

Per ℔......20@22¢

Spelter—

Western Spelter...... 5¼@5½¢

Spiral Pipe—

See *Conductors.*

Stove Pipe Elbows—

See *Elbows, Stove Pipe.*

Stove Trucks—

See *Trucks, Stove.*

Strainers Conductor—

Galvanized......50%

Tin Pigs and Bars—

Banca, pigs, ⅌ ℔......30 @31 ¢

Straits, pigs, ⅌ ℔......30 @31 ¢

Straits, in bars, ⅌ ℔......31 @32 ¢

Tin Plates American

Charcoal Plates, Bright—

N. B.—The price of 20 x 28 sizes double the price of 14 x 20.

Calland Grade:

IC,	14 x 20	$7.00
IX,	14 x 20	8.50
IXX,	14 x 20	9.75
IXXX,	14 x 20	11.00
IXXXX,	14 x 20	12.25

Melyn Grade:

IC,	14 x 20	6.50
IX,	14 x 20	8.00
IXX,	14 x 20	9.25
IXXX,	14 x 20	10.50
IXXXX	14 x 20	11.75

Allaway Grade:

IC,	14 x 20	6.00
IX,	14 x 20	7.10
IXX,	14 x 20	8.20
IXXX,	14 x 20	9.30
IXXXX,	14 x 20	10.40

Coke Plates, Bright—

Bessemer Steel, or equal to J. B. Grade, full weight } IC, 14 x 20......$4.90@5.00

" " IX, 14 x 20......$6.00

N. B.—The reduction per box on lighter Plates than IC, 14 x 20, is as follows:

100 ℔......15¢

95 ℔......20¢

90 ℔......25¢

85 ℔......30¢

Terne Plates—

N. B.—The following prices are for IC 20 x 28, the rate for 14 x 20 being half as much. IX is usually held at $2 per box advance for 8 to 10 ℔ coating and $2.50 to $3 advance for 15 ℔ and upward.

About 40 ℔ coating......$16.00@16.50

About 30 ℔ coating...... 15.25@15.75

About 20 ℔ coating...... 13.25@13.75

About 15 ℔ coating...... 11.25@11.75

About 8 ℔ coating......@10.00

Boiler Plates, American—

IXX, 14 x 26..(112 sheets)......$12.50

IXX, 14 x 28..(112 sheets)...... 13.50

IXX, 14 x 31..(112 sheets)...... 15.00

Troughs Eave—

See *Eave Trough.*

Trucks, Stove—

Improved Lock Frame, per doz...$15.00

Steel Lock Frame, per doz...... 18.00

Daisy Improved pattern, ⅌ doz... 18.00

Tubes and Tubing—

Brazed Brass, List June 6, 1898......40%

Copper and Bronze, 3c per lb. list more than Brass.

Seamless Brass Tubes, net list Feb. 6 1899

Tin......50%

Galvanized......50%

Fittings for do......40%

Zinc—

600 ℔ casks ⅌ ℔......6¼¢

Per ℔......6¾@7¢

PLUMBERS' AND STEAM FITTERS' SUPPLIES.

Boilers, Galvanized—

Standard Boilers:

30 gal......72½%

35 and 40 gal......70%

Other sizes up to 52 gal......65%

52 gal. and above......55&5%

Extra Heavy Boilers:

18 to 52 gal......60%

53 gal. and above...... 50&5%

Brass Work, Plumbers'—

List of December 7, 1896.

Compression:

Basin Cocks......65%

Bath Cocks and Double Bath Cocks.. 65%

Bibs......65%

Bibs, Flanged......65%

Fuller:

Bibs......70%

Basin Cocks, Nos. 1 to 4......70%

Bath Cocks, No. 4½......$2.40 each net

Ground Key Work:

Finished Bibs......55&5%

Rough Bibs...... 60%

Rough Stop and Stop and Waste Cocks......70@70&5%

Rough Stop and Stop and Waste Cocks, Patented...... 65@65&5%

Miscellaneous—

Basin Clamps......60@65%

Basin Plugs......60@65%

Chain Stays......60&5@70%

Iron Boiler Couplings:

	Lead Pipe.	Iron Pipe.
Plain Face..⅌ set	$0.95	$1.05
Ground Face ⅌ set	$1.00	$1.10

Sink or Bath and Wash Tray Plugs.60@65%

Soldering Nipples......70&5@75%

Soldering Unions......70&5@75%

Union Elbows, Hot Water Heating.... 75@75&15%

Cocks, Valves &c.—

Cocks—

Brass—

Air and Radiator Air......75@75&5%

Gas Meter and Union Meter......65@70%

Steam......65@70%

Iron—

All Iron......70@70&10%

Iron with Brass Plugs......65@70%

Valves—

Brass—

Check......65@70%

Garden Hose......65&10@70%

Gate...... 65@65&10%

Globe and Angle, hose outlet.65@65&10%

Globe, Angle and Cross....65&10@70&5%

Horizontal, Vertical and Angle Check... 65@65&10%

Hot Water Radiator......75%

Radiator......70&10%

Safety......65%

Safety, Low Pressure......65%

Jenkins' Disc:

Check......65%

Gate......65%

Globe, Angle and Cross......70%

Radiator......80%

Radiator, Corner......75%

Safety......65%

Iron—

Iron Body......70@70&5%

Foot......65@70%

Jenkins Bros.':

All Iron, except Gate......40&5%

All Iron Gate......35@40%

Iron Body, except Gate......60%

Iron Body Gate......50@50&5%

Swing Check......50%

Earthenware—

Brown Glazed Wash Tubs......20%

Brown Glazed Sinks, Kitchen and Pantry......20%

Basins, Urinals and Hoppers......45%

Closet Bowls, Sundries, Washouts and Pedestals......50%

Fittings—

Brass Fittings—

Finished......70@75%

Rough......70@75%

Bushings......70@75%

Nipples......70@70&2½%

Unions, Rough and Finished....70@70&5%

Iron—

Cast Iron Fittings, Black and Galvanized, Standard sizes......65@70%

Cast Iron Bushings and Plugs.... 65@70%

Cast Iron Flanges...... 65@70%

Cast Iron Floor Flanges......65@70%

Malleable Iron Fittings (from ℔ list).50%

" " Bushings...... 65@70%

" " Unions......65@70%

" " Unions, Flange 60&10@70%

" " Pipe Hangers, Universal 50%

Wrought Iron Nipples......65@70%

" " Couplings......60@65%

" " Long Screws......60@65%

Lavatories—

Porcelain Enameled Iron......30@30&10%

Oakum—

Plumbers' Oakum, 50 lb. bales, ⅌ ℔ 3½¢

Pipe—

Brass, Iron Pipe Size—

⅛	¼	½	¾ to 3 Inch
$0.38	.34	.29	.23 ⅌ ℔

Cast Iron Soil—

List Feb. 25, 1901.

2 to 6 inch inclusive.

Standard...... 50&5%

Extra Heavy......60&7½%

All Fittings......65&10%

7 to 15 inch.

Pipe and Fittings, Standard and Extra Heavy......50%

Wrought Iron—

List Feb. 15, 1900.

	Black.	Galv
⅛ to ½ inch	58%	46%
¾ to 12 inch	65%	53%
Extra Heavy, Plain Ends	50%	40%
Double Extra Heavy	20%	20%

Radiators—

Standard List.

Steam......50&2½%

Hot Water......50%

Sinks, Etc.— Cast Iron—

	Black.	Galv.
Sinks, Square, Half Round and Corner	60@65%	60@65%
Sink Legs	60%	60@65%
Sink Backs	60%	60@65%

Boiler Stands, Cast Iron......50@10@60%

Cesspools, Cast Iron......50%

Wrought Steel Sinks—

New Era, Galv'd and Enameled... 70&5%

New Era, Painted......50&10%

L. & G......50%

Traps—

Drawn Lead Traps, List June 3, 1901.50&5%

Tubs, Bath—

List April 1, 1902.

Cast Iron Enameled Bath Tubs.

Regular Patterns, Guaranteed......30%

All Special Patterns......15%

Solid Copper, list of Feb. 1, 1899......40%

Solid Porcelain—Class A, 30%: B, 40%; C, 50%.

Steel Clad Copper Lined, list of Feb. 1, 1899......50@55%

ALPHABETICAL LIST OF ADVERTISERS.

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American Blower Co. 24
American Galvanizing Wks. 83
American Radiator Co. 16
American Sheet Steel Co. 1&80
American Steam Gage & Valve Mfg. Co. 1
American Tin Plate Co. 80
Anderson Coupling Co. 31
Arcade Mfg. Co. 29
Armstrong Mfg. Co. 81
Asheville Mica Co. 26
Asphalt Ready Roofing Co. 81
Auld & Conger Co. 78
Barstow Stove Co. 88
Beckwith, P. D., Est. of 2
Berger Bros. Co. 77
Berger Mfg. Co 82
Bergstrom Bros. & Co. 18
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Blodgett, G. S. Co. 24
Boynton Furnace Co. 12
Brand Stove Co. 27
Bray, J. & Co. 78
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Edwards Mfg. Co., Covington, Ky.
Frand, Martin J. & Co., Camden, N. J.
Friedley & Voshardt, Chicago, Ill.
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Ball Cocks
Foster, F. W. Mfg. Co., Boston, Mass.

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Day Metallic Mfg. Co., Detroit, Mich.

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Taylor, N. & G. Co., Phila., Pa.

Blast Gates.
American Blower Co., Detroit, Mich.

Blowers.
American Blower Co., Detroit, Mich.
Buffalo Forge Co., Buffalo, N. Y.

Boiler Handles.
Berger Bros. Co., Phila., Pa.

Boilers
Mueller, L. J. Furnace Co. Milwaukee, Wis.

Boilers, Range.
Koven, L. O. & Bro., 50 Cliff St., N. Y
Wolff, L. Mfg. Co., Chicago, Ill.

Brass Goods
Jenkins Bros., 71 John St., N. Y.

Burners, Acetylene.
Carroll, J. B., Chicago, Ill.

CanMakers' Tools and Machines.
Bliss, E. W. Co., Brooklyn, N. Y.
Gordon, W. J., Phila., Pa.
Niagara Machine & Tool Wks., Buffalo, N. Y.
Robinson, J. M. Mfg. Co., Cincinnati, Ohio.
Stiles & Parker Press Co., Brooklyn, N. Y

Ceilings, Metallic.
Berger Mfg. Co., Canton, O.
Canton Steel Roofing Co., Canton, O.
Eller, J. H. & Co., Canton, O.
Friedley & Voshardt, Chicago, Ill.
New York Iron Roofing & Cor. Co., Jersey City, N. J.

Cellar Drainers.
Kemp, C. M. Mfg. Co., Baltimore, Md.

Cement Tampers.
Kramer Bros., Dayton, O.

Coal Vases.
Cincinnati Stamping Co., Cincinnati, Ohio.

Coils.
National Pipe Bending Co., New Haven, Conn.

Conductor Pipe and Elbows.
Berger Bros. Co., Philadelphia, Pa.
Clark, Quien & Morse, Peoria, Ill.
Lawrence-Letts Elbow Co., Ltd., Waverly, N. Y.
McClure & Co., Pittsburgh, Pa.

Copper, Roofing and Cornice.
Gummey, McFarland & Co., Phila., Pa.

Cornice Machinery.
Double Truss Cornice Brake Co., Buffalo, N. Y.
Keene, Geo. C. & Co., Cincinnati, O.
Niagara Machine & Tool Works, Buffalo, N. Y.
Ohl, Geo. A. & Co., Newark, N. J.
Peck, Stow & Wilcox Co., 27 Murray St., New York.
Phila. Machine Tool Co., Phila., Pa.
Robinson, J. M. Mfg. Co., Cincinnati, Ohio.

Cornice Work, Galvanized Iron.
Mullins, W. H., Salem, O.

Cut Offs, Rain Water.
Cooney & Geiger, Indianapolis, Ind.
Perkins, J. L. & Co., Chicago, Ill.

Dampers.
Arcade Mfg. Co., Freeport, Ill.
Howes, S. M. Co., Boston, Mass.
Shields, W. H. & Co., Troy, N. Y.
Troy Nickel Works, Troy, N. Y.

Die Stocks.
Curtis & Curtis Co., Bridgeport, Ct.

Dinner Pails.
Lisk Mfg. Co., Canandaigua, N. Y.

Draft Registers.
Matthews, H. A. Mfg. Co., Seymour, Ct.

Drop Hammers.
Bliss, E. W. Co., Brooklyn, N. Y

Dryers.
Sommer's, John Son, Newark, N. J.

Dumb Waiters.
Energy Elevator Co., Phila., Pa.

Eave Troughs.
Berger Bros. Co., Philadelphia, Pa.
Berger Mfg. Co., Canton, O.
Clark, Quien & Morse, Peoria, Ill.
Eller, J. H. & Co., Canton, O.

Eave Trough Hangers.
Berger Bros. Co., Phila., Pa.
Berger Mfg. Co., Canton, O
Heartley Machine Variety Iron & Tool Works, Toledo, O.

Edgers, Roofing.
Danzer Metal Works, Hagerstown, Md.

Elbows, Stove Pipe.
Lawrence-Letts Elbow Co., Ltd., Waverly, N. Y.

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Scranton Corundum & Emery Wheel Co., Scranton, Pa.

Enamel.
Nickel Plate Stove Polish Co., Chicago, Ill.

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Lisk Mfg. Co., Canandaigua, N. Y.
National Enameling & Stamping Co., 78 Beekman St., N. Y

Enameling.
St. Louis Enameling Co., St. Louis, Mo.

Exhausters.
American Blower Co., Detroit, Mich.
Buffalo Forge Co., Buffalo, N. Y.

Faucets.
Clark Novelty Co., Rochester, N. Y

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Presbrey Stove Lining Co., Taunton, Mass.
Rutland Fire Clay Co., Rutland, Vt.
Valentine, M. D. & Bro. Co., Woodbridge, N. J.
Williams Stove Lining Co., Taunton, Mass.

Fire Pots.
Clayton & Lambert Mfg. Co., Detroit, Mich.
Wolff, L. Mfg. Co., Chicago, Ill.

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Shields, W. H. & Co., Troy, N. Y.
Troy Nickel Works, Troy, N. Y

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Pocock, Oliver, Cincinnati, O.

Furnace Cement.
Perkins, J. L. & Co. Chicago, Ill.
Rutland Fire Clay Co., Rutland, Vt.

Furnace Pipe and Fittings.
Chicago Furnace Supply Co., Chicago, Ill.
Excelsior Steel Furnace Co., Chicago, Ill.
International Heater Co., Utica, N. Y.
Meyer, F. & Bro Co., Peoria, Ill.
Osborn, J. M. & L. A., Cleveland, O

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Beckwith, P. D., Est. of, Dowagiac, Mich.
Bergstrom Bros. & Co., Neenah, Wis.
Boynton Furnace Co., 207 Water St., N. Y.
Brand Stove Co., Milwaukee, Wis.
Brien Heater Co., Hoosick Falls, N. Y.
Dighton Furnace Co., Taunton, Mass.
Floyd, Wells & Co., Royersford, Pa.
Forest City Fdry, & Mfg. Co., Cleveland, O.
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Howes, S. M. Co., Boston, Mass.
International Heater Co., Utica, N. Y.
Kelsey Heating Co., Syracuse, N. Y.
Lennox Manufacturing Co., Marshalltown, Iowa.
Magee Furnace Co., Boston, Mass.
Meyer, F. & Bro. Co., Peoria, Ill.
Monorief Furnace & Fdry Co., Atlanta, Ga.
Mueller, L. J. Furnace Co., Milwaukee, Wis.
Patric Furnace Co., Springfield, O.
Peck-Williamson Co., Cincinnati, O
Richmond Company, Norwich, Conn.
Robinson Furnace Co., Chicago, Ill.
Schwab, R. J. & Sons Co., Milwaukee, Wis.
Sheppard, Isaac A. & Co., Phila., Pa.
Stamford Foundry Co., Stamford, Ct.
Thatcher Furnace Co., 240 Water St., N. Y.
Utica Heater Co., Utica, N. Y.
Walker & Pratt Mfg. Co., Boston, Mass.

Gas Heaters. (*See Stoves and Ranges. Gas.*)

Gas Machines.
Kemp, C. M. Mfg. Co., Baltimore, Md.

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Wheeler, W. A., Indianapolis, Ind.

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American Radiator Co., Chicago, Ill.
Barstow Stove Co., Providence, R. I.
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Dighton Furnace Co., Taunton, Mass
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Gorton & Lidgerwood Co., 96 Liberty St., New York.
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Richmond Company, Norwich, Conn.
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Smith & Anthony Co., Boston, Mass.
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Walker & Pratt Mfg. Co., Boston, Mass.

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Munsell, Eugene & Co., 218 Water St., New York.
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Independent Register Co., Cleveland, Ohio.

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Matthews, H. A. Mfg. Co., Seymour, Ct

Registers, Hot Air.
U. S. Register Co., Ltd., Battle Creek, Mich.

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Asphalt Ready Roofing Co., 136 Water St., N. Y.

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Stowell Mfg. Co., Jersey City, N. J

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Chattanooga Steel Roofing Co., Chattanooga, Tenn.
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Globe Iron Roofing & Corrugating Co., Cincinnati, O.
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New York Iron Roofing & Cor. Co., Jersey City, N. J.

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Harrington & King Perforating Co., Chicago, Ill.

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Double Truss Cornice Brake Co., Buffalo, N. Y
Gordon, W. J., Phila., Pa.
Heartley Machine Variety Iron & Tool Works, Toledo, O.
Keene, Geo. C. & Co., Cincinnati, O.

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Miner & Peck Mfg. Co., New Haven, Conn.
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Ohl, Geo. A. & Co., Newark, N. J.
Peck, Stow & Wilcox Co., 27 Murray St., New York.
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McClure & Co., Pittsburgh, Pa.
Osborn, J. M. & L. A., Cleveland, O.
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Follansbee Bros. Co., Pittsburgh, Pa.
Gummey, McFarland & Co., Phila., Pa.
Osborn, J. M. & L. A., Cleveland, O.
Wood Co., Alan, Philadelphia, Pa.

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Cincinnati Stamping Co., Cincinnati, O.
Cortright Metal Roofing Co., Philadelphia, Pa.
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Meurer Bros. Co., Brooklyn, N. Y.
Montross Metal Shingle Co., Camden, N. J.

Shot.
Colwell Lead Co., 63 Centre St., N. Y

Siding. (*See Roofing and Siding.*)

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Canton Steel Roofing Co., Canton, O.
Chattanooga Steel Roofing Co., Chattanooga, Tenn.
Drouve, G. Co., Bridgeport, Conn.
Galesburg Cornice Works, Galens, Ill.
Mullins, W. H., Salem, O.

Slaters' Tools.
Galt, Jno. & Sons, 253 Broadway, N. Y.
Salem Nail Co., 279 Pearl St., N. Y.

Snow Guards.
Clason Arch. Metal Works, Providence, R. I.

Solder.
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McClure & Co., Pittsburgh, Pa.
Meurer Bros. Co., Brooklyn, N. Y
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Milwaukee Pattern Works, Milwaukee, Wis.
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Troy Nickel Works Troy, N. Y

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Troy Nickel Works, Troy, N. Y.

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Howes, S. M. Co., Boston, Mass.

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Brand Stove Co Milwaukee, Wis.
Champion Steel Range Co., Cleveland, Ohio.
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Fuller & Warren Co., Troy, N. Y.
Hess-Snyder Company, Massillon, Ohio.
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Pittsburgh Stove & Range Co., Pittsburgh, Pa.
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Ringen Stove Co., St. Louis, Mo.
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Stamford Foundry Co. Stamford, Ct.
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Van, John, Range Co., Cincinnati, O.
Walker & Pratt Mfg Co., Boston, Mass.
Weir Stove Co., Taunton, Mass
White, Warner Co., Taunton, Mass.
Willard, Wm. G., St. Louis, Mo.

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Dighton Furnace Co., Taunton, Mass.
Howes, S. M. Co., Boston, Mass.
Metropolis Sheet Metals & Stove Repairing Co., Newark, N. J.
Ringen Stove Co., St. Louis, Mo.
Standard Lighting Co., Cleveland, O.

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Heath, C. C. & Co, Philadelphia, Pa.
Rathbone, Sard & Co., Albany, N. Y.
Ringen Stove Co., St. Louis, Mo.
Standard Lighting Co., Cleveland, O.

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American Radiator Co., Chicago, Ill.

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Bertsch & Co., Cambridge City, Ind.
Bliss, E. W. Co., Brooklyn, N. Y.
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Follansbee Bros. Co., Pittsburgh, Pa.
Keene, Geo. C. & Co., Cincinnati, O.
Meurer Bros. Co., Brooklyn, N. Y.
Niagara Machine & Tool Wks., Buffalo, N. Y.
Ohl, Geo. A. & Co., Newark, N. J.
Peck, Stow & Wilcox Co., 27 Murray St., New York.
Stiles & Parker Press Co., Brooklyn, N. Y.
Weiss, H. & Co., 20 Cliff St., N. Y

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Vogel, Wm. & Bros. Brooklyn, N. Y.

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American Tin Plate Co., New York.
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Follansbee Bros. Co., Pittsburgh, Pa.
Gummey, McFarland & Co., Phila., Pa.
McClure & Co., Pittsburgh, Pa.
Merchant & Co, Philadelphia, Pa.
Meurer Bros. Co., Brooklyn, N. Y.
Osborn, J. M. & L. A., Cleveland, Ohio.
Taylor, N. & G. Co., Philadelphia, Pa.

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Crosby Steam Gage & Valve Co., Boston, Mass.
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Kramer Bros., Dayton, O.
Merchant & Co, Philadelphia, Pa.
Meurer Bros. Co., Brooklyn, N. Y.
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Colwell Lead Co., 63 Centre St., N. Y.

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Water Heaters.
Davis Heater Co., Racine, Wis.
Kemp, C. M. Mfg. Co., Baltimore, Md.

Wind Gates.
Miner & Peck Mfg. Co., New Haven, Ct.

Window Frames, Metal.
Smith-Warren Co., Boston, Mass.

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THE METAL WORKER.

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Original letters of reference should not be inclosed with replies to advertisements appearing in these columns as they are frequently mislaid and lost. A copy of the reference will serve the purpose.

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A first-class STEAM and HOT WATER FITTER; must be able to work from plans; steady employment and good wages to the right man; write, giving references, experience and wages wanted. Whitmore & Whitmore, Rochester, N. Y. June 21

Steady employment to a good TINNER who understands plumbing; good job for the right man. F. A. Laraway, Cleveland, N. Y. June 21

Six CORNICE and SKYLIGHT WORKERS; only first-class men need apply; don't write; come prepared for work; union shop, eight hours. Hugh C. Lendrim, 82 and 84 Clay street, Paterson, N. J. June 21

TINSMITHS, WASH BOILER MAKERS and SOLDERERS. Address or apply 120 North street, Boston, Mass. June 21

SLATER and TINNER on outside work; steady job the year around to a good workman. P. H. Bayley, Sidney, Ohio. June 21

Wanted, a man who thoroughly understands NICKEL PLATING in stove works; one who can handle labor to the best advantage; state age, experience, &c. Address "Nickel Plating," care *The Metal Worker*, 1205 Chemical Building, St. Louis, Mo. June 21

A thoroughly reliable SOLICITOR and ESTIMATOR for cornice, skylight, slate and tile roofing; answer, giving fullest particulars as to ability, also age, nationality and salary expected, and list of references. "L. B. C. Company," Room 214, 145 La Salle street, Chicago, Ill. June 21

TINSMITHS and PLUMBERS at once; must be sober and reliable; good wages; applicants must state wages and experience. M. Carney Estate, Philmont, N. Y. June 21

TINSMITH; state experience in roofing and furnace work and wages wanted; steady work for reliable man. J. H. Brown, 372 North street, Rochester, N. Y. June 21

Two TINNERS; steady work all the year; must be good men. E. C. Josten, La Crosse, Wis. June 21

Several experienced men for RIVETING CORRUGATED ROOFING AND SIDING to steel frame work; state wages wanted. "I.," care *The Metal Worker*, New York. June 21

WIRE WORKER; one who has had experience in making fire place spark guards; no one but a first-class workman and who is steady in his habits need apply; answer, giving experience, "H.," care *The Metal Worker*, New York. June 14

Agent to carry good selling specialty to stove trade on commission. "K. G.," care *The Metal Worker*, New York. June 14

SALESMAN, to sell as side line our tinners' furnaces and blow torches on commission basis; good field. Geo. W. Diener Mfg. Company, 14 N. Canal street, Chicago, Ill. June 14

CORNICE CUTTERS at the bench and power brake hands wanted. Apply David Lupton's Sons, Allegheny avenue and Tulip street, Philadelphia, Pa. June 14

TINNER, PLUMBER and GAS FITTER for country shop; nice town in natural gas region, with good schools and low rent; will give steady work and good wages to a competent, reliable man. Gould-Carter Company, Friendship, N. Y.

One PLUMBER and one TINSMITH belonging to the United Plumbers and Tinsmiths Union; none but good men need apply; wages, $2.50 per day, eight hours' work. 374 Main street, Ansonia, Conn. June 14

A good TINNER for inside and outside work; to a good man will give a steady job. McCombs & Eddy, Connersville, Ind. June 14

First-class PLUMBER and STEAM FITTER; must be steady and reliable; to experienced workman we have a steady position. Sheets & Knodle Company, De Kalb, Ill. June 14

A thoroughly reliable man to take charge of shipping department in a wholesale plumbing supply house; must be thoroughly acquainted with the business, competent and sober; state age, experience, reference and salary expected. P. O. Box 1096, Springfield, Mass. June 14

Competent FOREMAN in a cornice shop in New York City. "K. L.," care *The Metal Worker*, New York. June 14

An A No. 1 FURNACEMAN; must be thoroughly competent and experienced; will pay the best wages for the right man. F. J. Wilhelm, 1104 Monroe street, Toledo, Ohio. June 14

First-class CORNICE and SKYLIGHT WORKER; one who can cut out, put together and erect his own work, if necessary; steady work, good wages, eight hours to the right man. Rourke Bros., 834 Grand avenue, New Haven, Conn. June 14

At once, a good PLUMBER and TINNER; steady work. C. E. Martin, Potsdam, N. Y. June 14

An experienced STOVE SALESMAN for Indiana. Bonnet-Nance Stove Company, Chicago Heights, Ill. June 14

Experienced STEEL RANGE MOUNTER. Bonnet-Nance Stove Company, Chicago Heights, Ill. June 14

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First-class PLUMBERS and STEAM FITTERS, at once; state wages wanted and experience; none but sober men employed. Theo. G. Scheid, Bluffton, Ohio. June 14

At once, a first-class PLUMBER; one who understands house heating and windmill work; none but nonunion and first-class men need apply; please state wages and give reference; ten-hour system required. J. H. Leslie, Leesburg, Va. June 14

A first-class TINSMITH by the year, at once; state experience, age and wages wanted for steady job; must be sober and steady. Box 794, Freehold, N. J. June 14

At once, a good, all around TINNER in country shop; steady employment to a good man and good wages; state age, experience, single or married, also price per week wanted. F. I. Peabody, Sharon, Litchfield County, Conn.

A first-class, all around TINNER; one who understands both bench and outside work; must be sober; steady work and good wages to rigbt man. J. J. Brislan, 311 Broadway, Frankfort, Ky. June 14

First-class WOOD PATTERN FITTER; a good position for the right man. Box 57, care *The Metal Worker*, 1205 Fisher Building, Chicago, Ill.. June 7

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SALESMAN well acquainted with the hardware, stove, tinware and metal work trades in St. Louis desires to represent manufacturers of goods sold to the trade mentioned; highest references furnished. "Sales Agency," care *The Metal Worker*, 1205 Chemical Building, St. Louis, Mo. June 21

TINSMITH: practical man in every particular. B. Marcus, 55 Forsyth street, New York. June 21

By TINSMITH and ROOFER, inside and outside work; also sheet iron worker; steady work desired. Harry Walk, 516 East Sixth street, New York. June 21

By experienced PLUMBER with knowledge of steam heating. "O.," care *The Metal Worker*, New York. June 21

As FOREMAN or SALESMAN, by an all around master plumber and heating apparatus man; can solicit, superintend and make plans of all kinds of heating; would travel and sell on part salary and commission plumbing supplies or heating apparatus, East or West: A1 references. "M.," 1 Bond place, Springfield, Mass. June 21

By PLUMBER; first-class, in country. George Snyder, 537 East Eighty-eighth street, New York. June 21

TIN and SHEET IRON WORKER, any kind; or general jobbing shop. Smith, 515 West Twenty-fourth street, New York. June 21

LICENSED PLUMBER; young man, 23, understands steam and hot water heating. A. E. Anglim, 210 Fifth street, Leominster, Mass. June 21

By a young man, experienced in PLUMBING, STEAM and GAS FITTING; some knowledge of tinning; wishes steady position, New York State preferred. "T. K.," 22 Almira street, Bloomfield, N. J. June 21

By practical STEEL RANGE and COOK WORKING FOREMAN; can educate help and get work out from start to finish; age 34, married, temperate. Wm. R. Burkhardt, 407 Rivard street, Detroit, Mich. June 21

By a PLUMBER; also understand steam, hot water and furnace heating; can furnish the best of references; am strictly temperate, honest and reliable; understand either city or country work. "Plumber," Box 185, Billerica, Mass. June 21

As ESTIMATOR and to take off quantities for roofing, cornices and skylights; am at present employed; have had 16 years' experience; acquainted among builders and architects. "Architectural," care *The Metal Worker*, New York. June 21

With some good house as a SALESMAN; have long experience as stove and tinware salesman; can speak German and English; have sold in New York State, Connecticut and New Jersey. "Hustler," care *The Metal Worker*, New York. June 21

By a first-class STEAM FITTER'S HELPER; eight years' experience; can do all kinds of pipe fitting and understand roofing and general jobbing, especially country work. H. J. Archer, 363 West Thirty-fourth street, New York. June 21

By a first-class TINNER and FURNACE HAND, with some first-class firm; able to give estimates on all kinds of work; Middle States preferred. "P. A. C.," Wellston P. O., St. Louis County, Mo. June 21

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By COPPER, TIN and SHEET IRON WORKER with 17 years' experience; at present employed in coffee urn department of a large hotel furnishing house in St. Louis. "G. A. H.," 3726 Iowa avenue, St. Louis, Mo. June 14

PLUMBER wants steady position; good mechanic; city or country; 17 years' experience. Jos. Larkin, 241 East 120th street, New York. June 14

As SUPERINTENDENT in sheet metal and slate work; accurate in estimates from plans; good manager of help; good executive ability; 30 years' experience. "Manager," care *The Metal Worker*, New York. June 14

By a thoroughly reliable and trustworthy young man in office of stove house, New York City preferred. "G. H. D.," care *The Metal Worker*, New York. June 14

HARDWARE CLERK, 37; seven years in builders' and general hardware; permanent position with busy, reliable firm, city preferred; references. "Permanent," care *The Metal Worker*, New York. June 14

As FOREMAN and DRAFTSMAN or SUPERINTENDENT by an experienced and first-class cornice, skylight and sheet iron worker; used to handling help to good advantage; references; ten years' experience; can start at once. Max Samlovitz, 1556 Avenue A, New York. June 14

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By a practical CORNICE and SKYLIGHT MAKER of long experience as foreman or cutter. "Cutter," 765 De Kalb avenue, Brooklyn, N. Y. June 14

In a stove foundry, by a man with 20 years' experience at FOLLOW BOARDING, PATTERN and FLASK MAKING. A. B. Salisbury, 112 Grand avenue, Syracuse, N. Y. June 14

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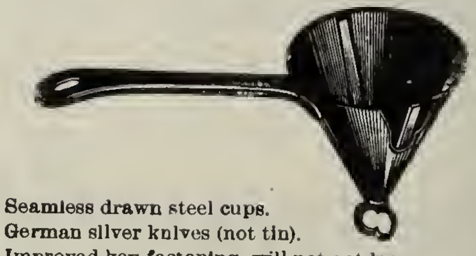

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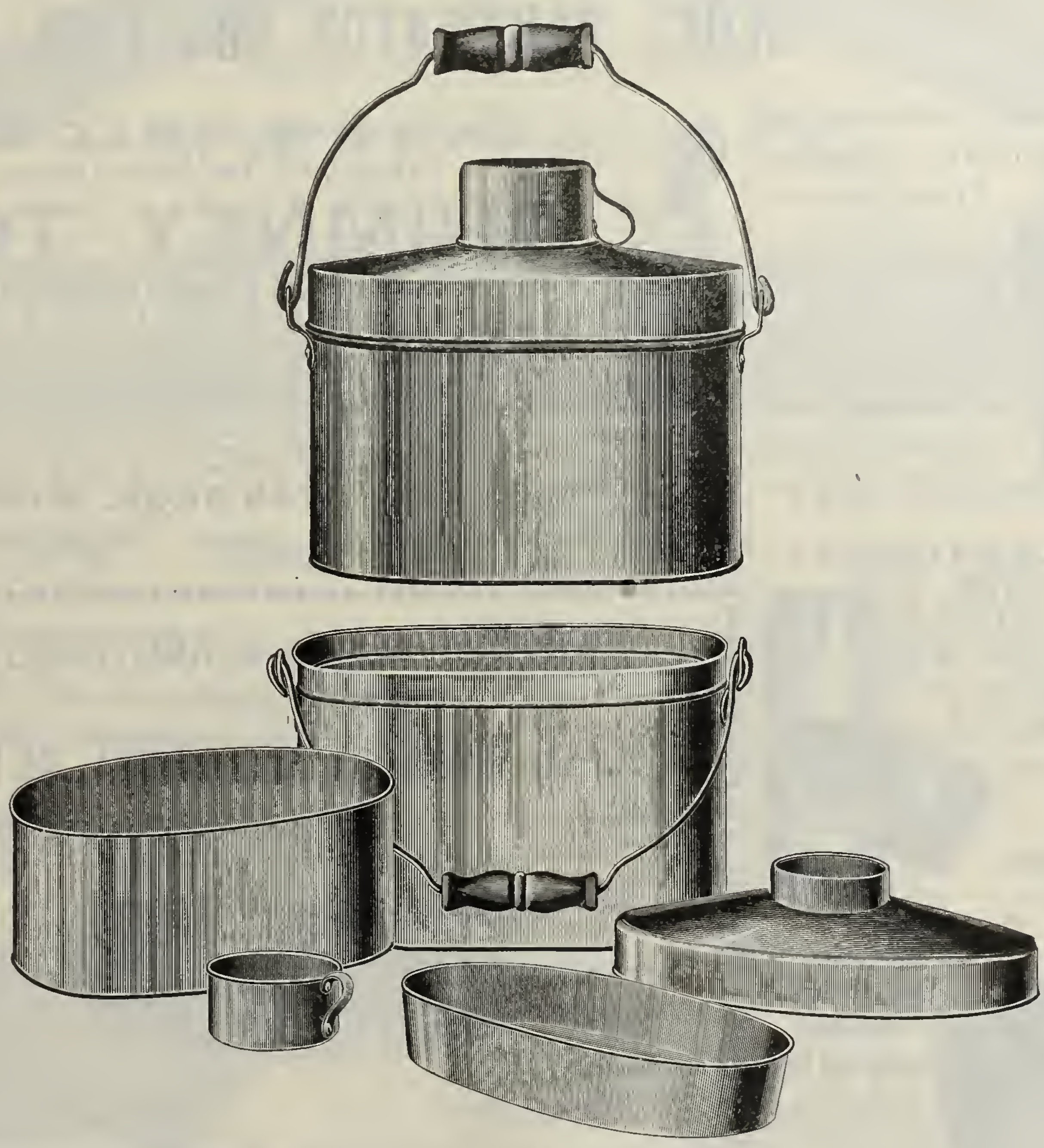

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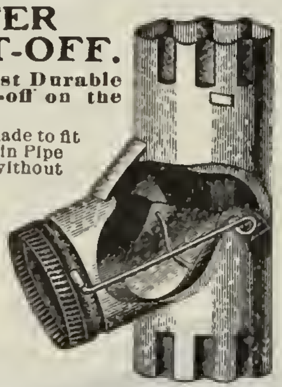

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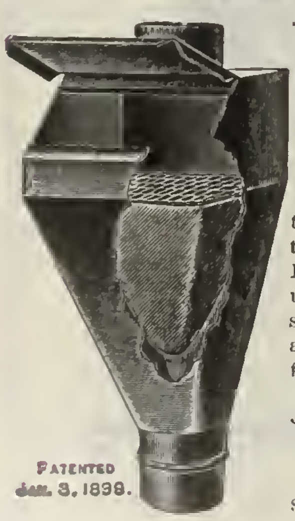

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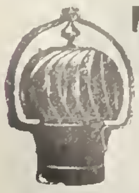

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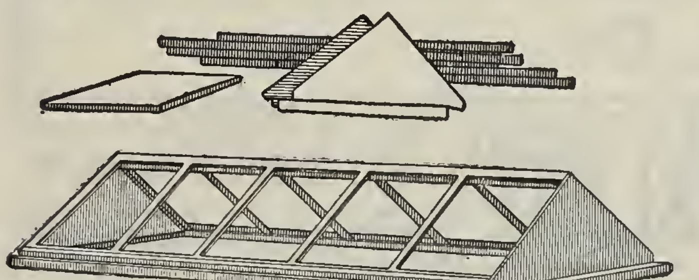

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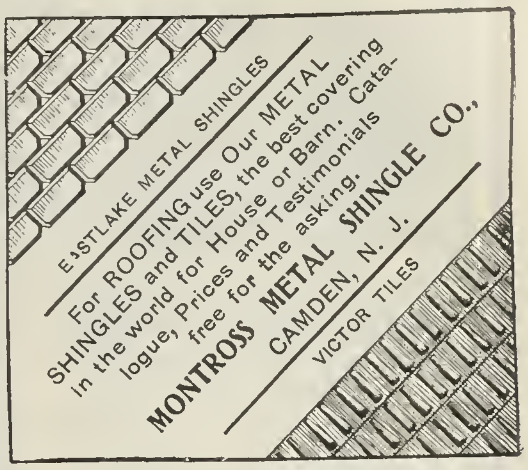

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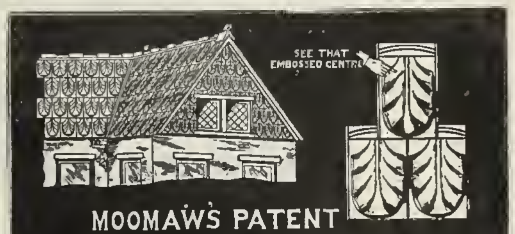

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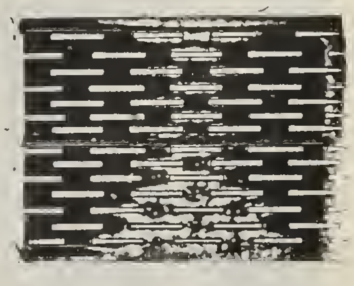

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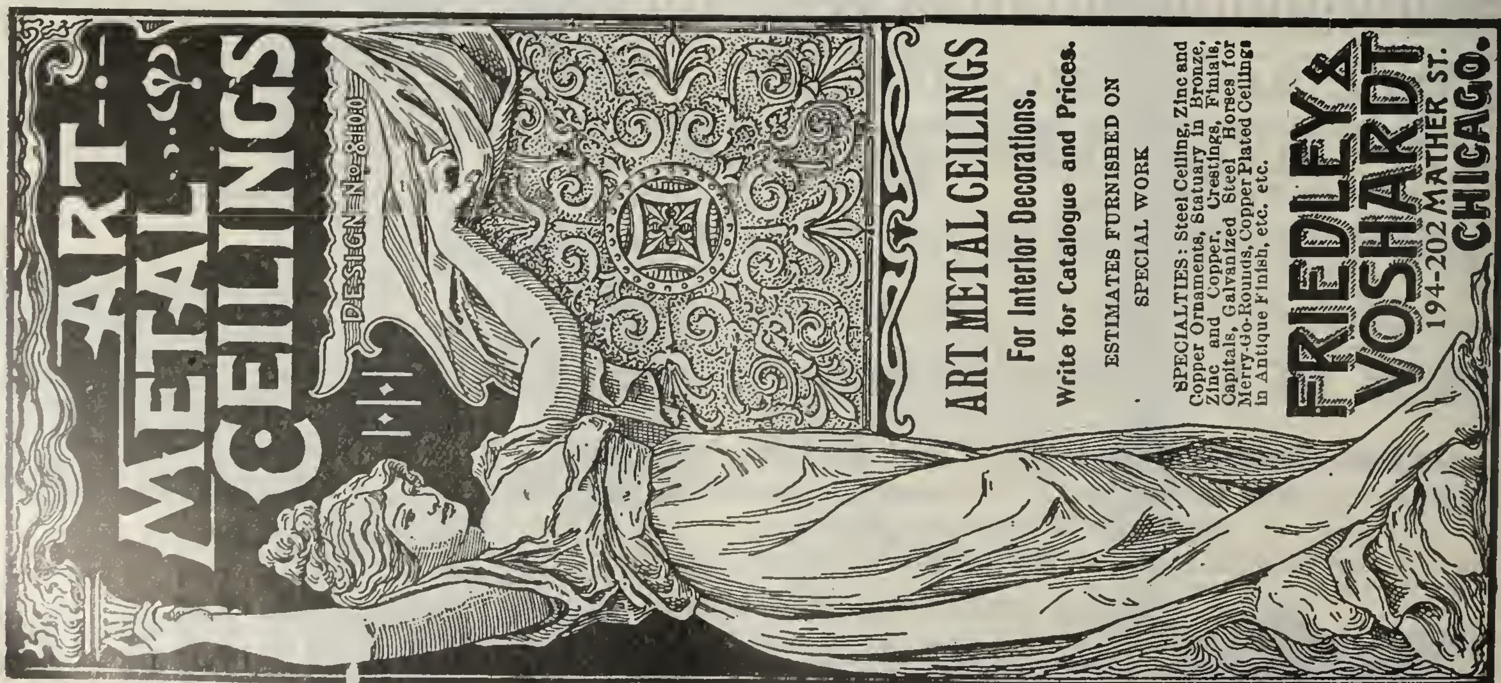

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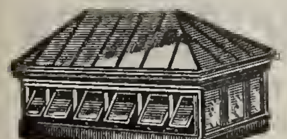

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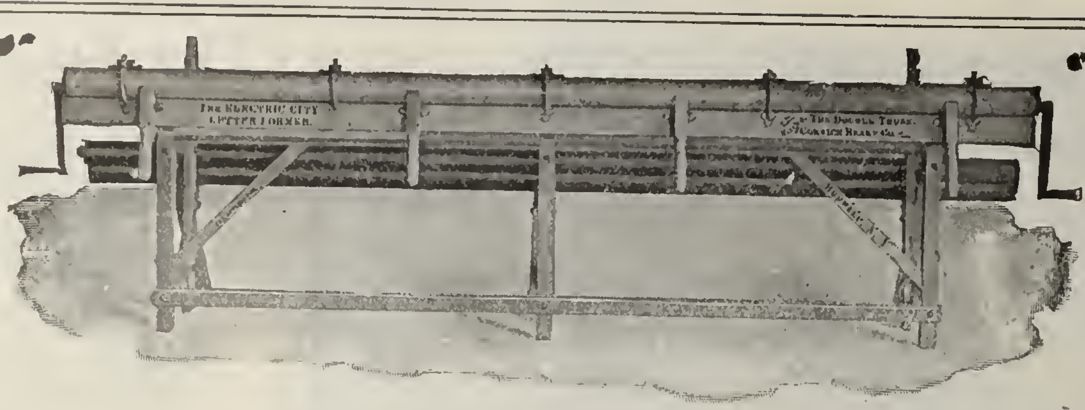
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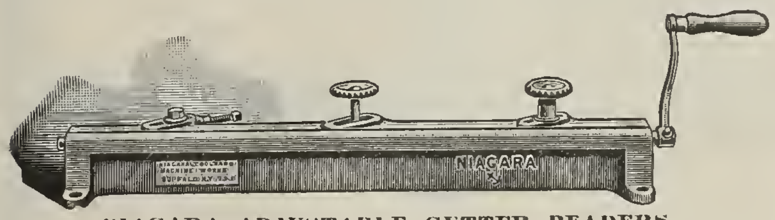

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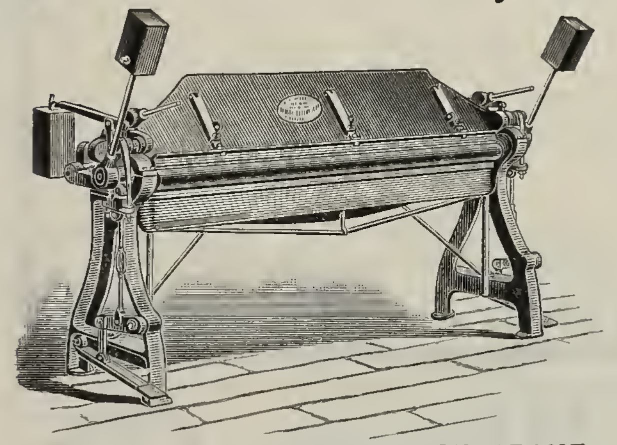

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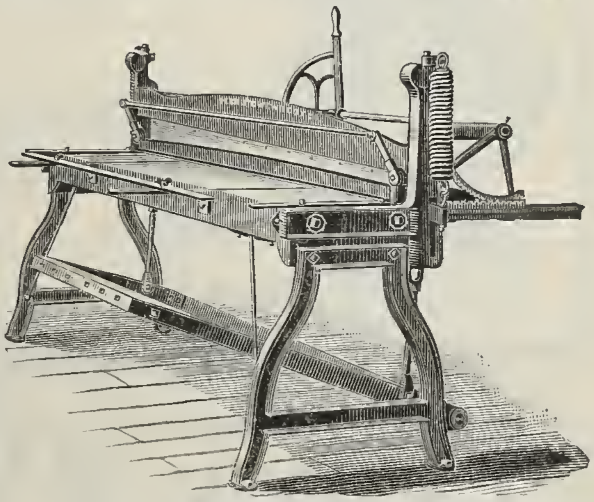

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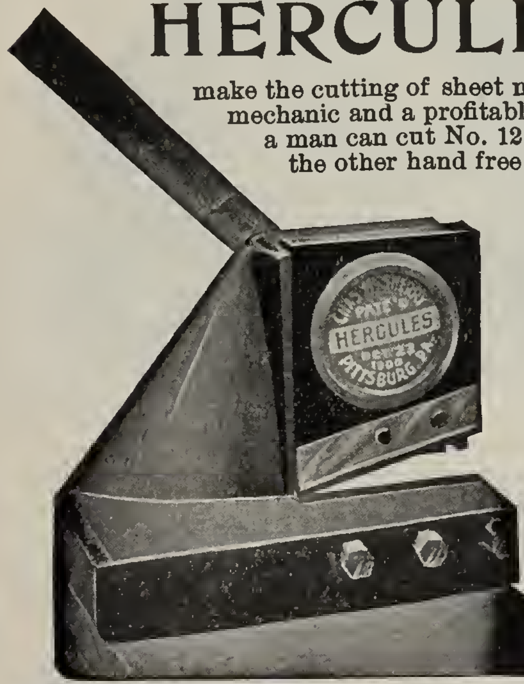

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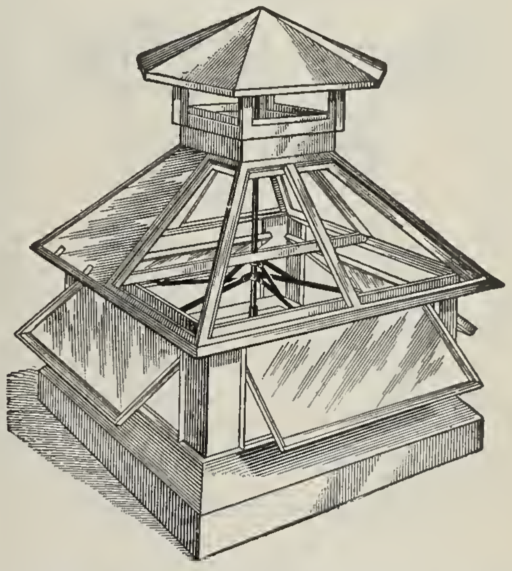

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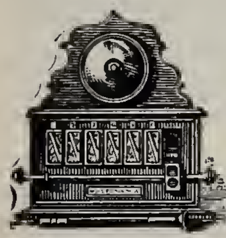

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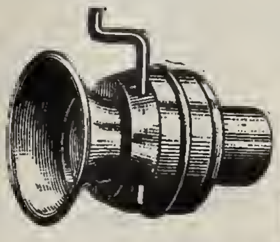

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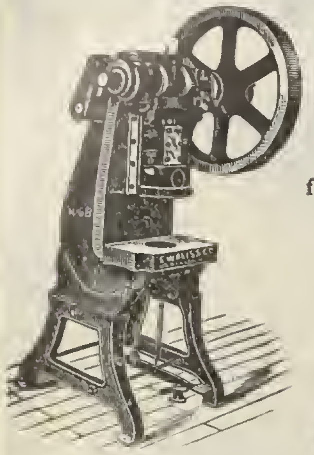

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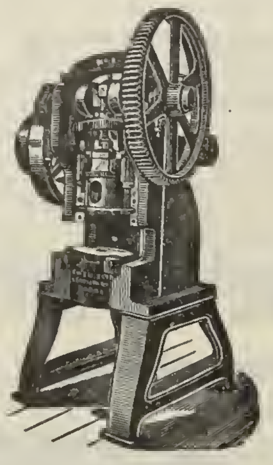

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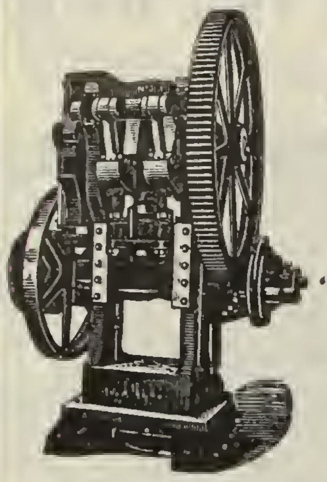

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Elbow and Skylight Patterns.

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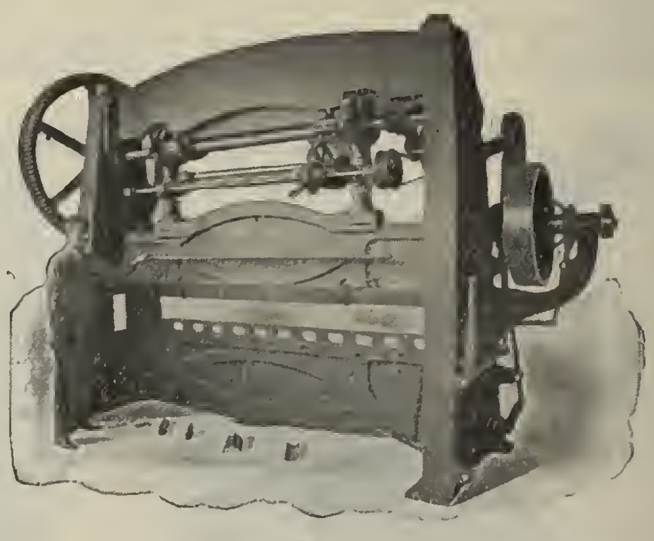
Squaring Shears,

Punches, Presses, Sheet Steel Lath Machines, Drop Presses, Draw Benches and *Special Machinery* of all descriptions.



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THIS SHEAR is made to work by either hand or foot power or both; with hand lever either right or left hand side. Made plain or with gauges Cuts ¼ in. stock and thinner. Send for circulars of shears and punches if in need.

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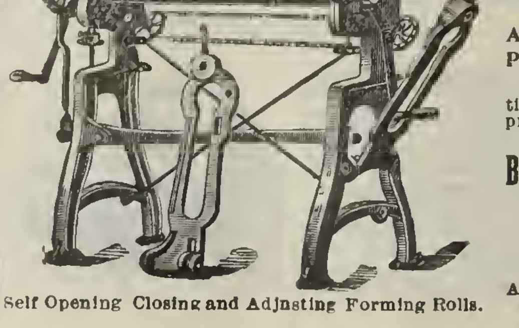

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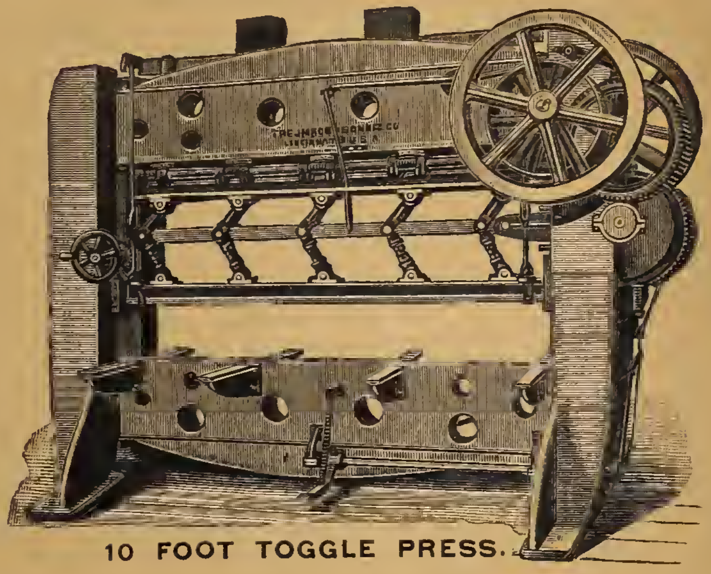
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Machinery for the Production of Iron Roofing a specialty.

Flanging Machine.

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Makers of the Keene Cornice Brake.

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DANZER'S LIGHTNING EDGERS, Pat. March 26, 1901.
Capacity, Foot Power 7 min. to a box; Hand Power 10 min.
Built in two sizes, 21 and 31 inches wide for hand, foot and belt power.
It will edge 27 iron and tin for roll or flat seam roofing.
Manufactured by **Danzer Metal Works,** HAGERSTOWN, MD., U. S. A.
FOR SALE BY ALL JOBBERS.

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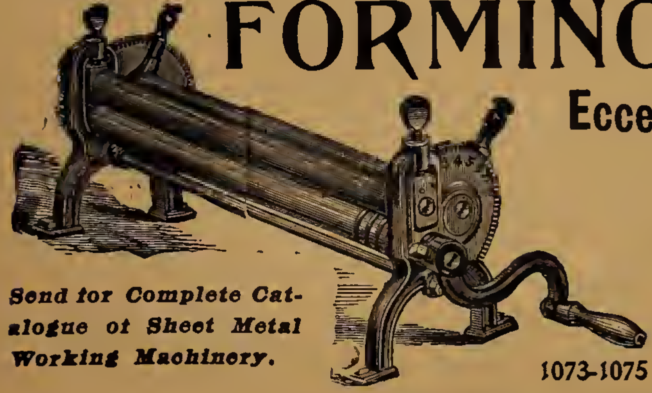

The advantage in using this machine is the quick adjustment of the back roll by means of graduated eccentrics.

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for Hand Power. We also make them for Belt Power.

20th CENTURY GROOVER, Handiest out.
Operated from one position. Automatic knock-out and *Quick Return*. Grooves 22 gauge.
Write for circular. Made by
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Made to be sold by the Hardware Trade. Can be placed in position by any carpenter. Catalogue free.

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SEALS-NAME PLATES-CHECKS-
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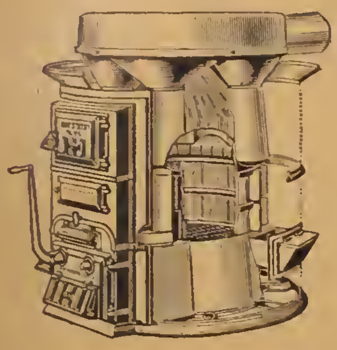
Bay State Furnaces



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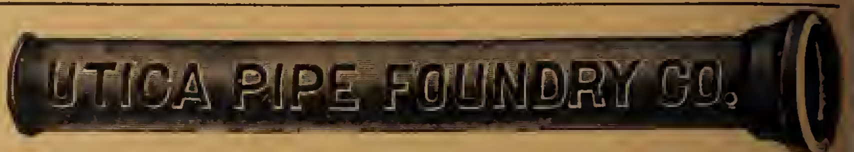
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If you want the best line; the line with the **most attractive** and progressive selling features, look into the merits of the

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Line of Ranges,
Steam and Water Heaters;
Hot Air and Combination Furnaces.

SMITH & ANTHONY CO., Boston.

A Cheap Priced

stove is usually shoddy. Shoddy means half fitted. You fit the other half which makes the shoddy cost more than first class goods. There's no use in talking if you believe in quality—sell

GLENWOODS.

Write the Weir Stove Company, Taunton, Mass.

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Genuine Charcoal Iron
Redipped Roofing Tin.

McCLURE & CO.,
Manufacturers of Tin Plate,

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Index to Reading Matter, Page 63 Index to Advertisements, Pages 65 - 67.

The Metal Worker

A WEEKLY JOURNAL OF THE
STOVE, ROOFING, CORNICE, TIN, PLUMBING AND HEATING TRADES.

With which is Incorporated The Stove and Tin Trade Journal, the Sheet Metal Builder, and Metal.

, LVII.
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NEW YORK AND CHICAGO, JUNE 28, 1902.

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RATCHET DIE PLATES
With Hill's Solid Dies ⅛ to 3 inches.
Especially adapted for Threading Wrought-Iron
Pipes In Cramped Positions, as in Trenches, or In
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WILL
INTEREST
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FOR STEAM AND HOT WATER HEATING.
INVESTIGATE FOR YOURSELF.
Send for Catalogue and Prices.
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Heating Specialties. American Steam Gauge & Valve Mfg. Co., Bismark St., Boston, Mass., U. S. A.

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GALVANIZED IRON

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common galvanized iron.
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VATOR VALVES,
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PUMP GOVERNORS,
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is a thing of beauty and a joy forever.
It sells in half the time it takes to sell
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GLOBE and ANGLE VALVES, IRON and BRASS.
All working parts renewable without taking the valve from piping. All parts interchangeable. Guaranteed not to leak at high pressure. Send for circular.
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Suitable for high or low pressure. Take no more room than an ordinary air cock. Endorsed by the leading steam experts as the best made and the quickest working. All genuine stamped with our Trade Mark.
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Galvanized and Black Sheets.
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FOUR WINNERS:
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READ OUR "AD"
Page 7.
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ROUND OAK
STANDARD of AMERICA

Commencing week of
July Fourth
we propose
in a continuous series
of fine drawings
to illustrate
on this page
the life of
Doe-Wah-Jack
his boyhood
his home
his ancestors
his youth
his games, contests
his diversions
his maturity
distinction and
honors as chief
We hope they
will prove of interest.
He is a good
stove salesman now
and wears store clothes

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Makers of Good Goods Only DOWAGIAC, MICH.

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Experts Say That the Old Fashioned Testimonial
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CARTON "B"

WARM AIR FURNACE.

FOR SOFT COAL.

A Furnace with an Established Reputation
For Thorough Efficiency.
Strong in Every Detail.
Made to Endure.

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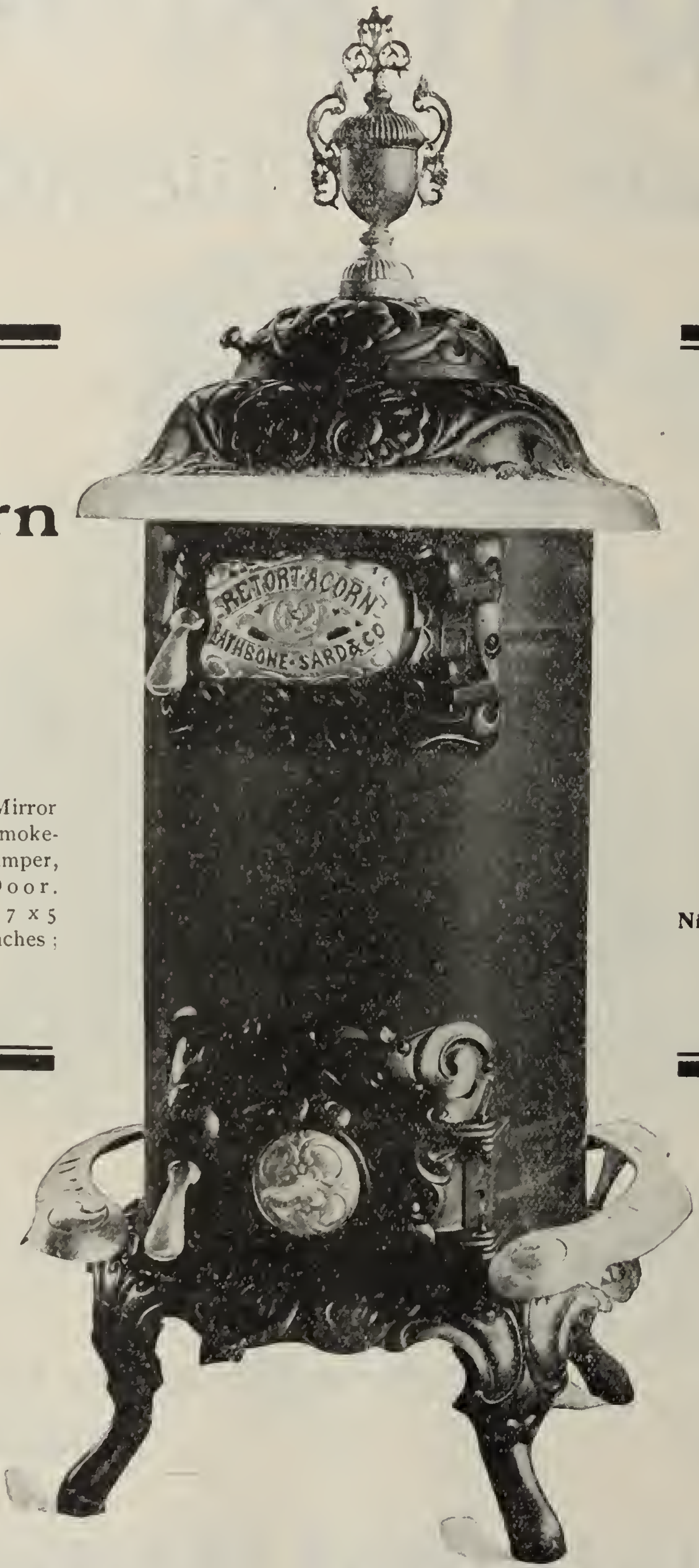

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Features—Heavy Steel, Mirror Finish, Down Draft Smoke-Burner with Wheel Damper, Large Swing Feed Door. Measurements: No. 42, 7 x 5 inches: No. 62, 8 x 5 inches; No. 82, 9¼ x 6½ inches.

SIZES:
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FIRE POTS:
10, 12 and 14 inches.

Nickel—Ventilated Swing Door Panel, Side Rails, Top Band, Malleable Handles and Urn.

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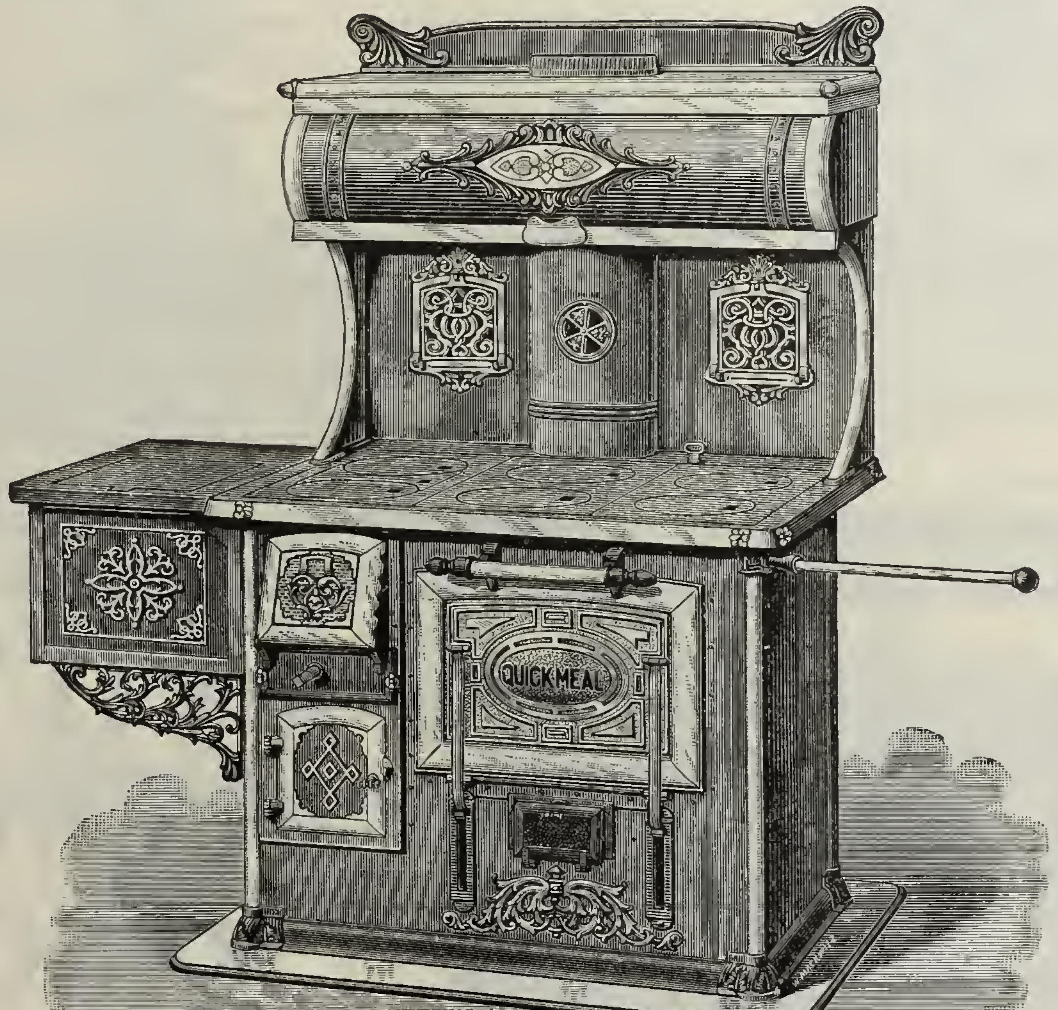
QUICK MEAL

STEEL RANGES



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HAVE ATTRACTIVE HIGH CLOSETS.

In their new dress for 1902 are attractive and handsome. Their **High Closets** and **High Shelves** are entirely new in design. They are made entirely out of sheet steel, which makes them light and strong and gives them a neat and smooth finish, not found in the ordinary old style cast iron ornamentation.

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A JOY FOREVER.

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For Hard, Soft Coal, Wood or Coke.

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Double Feed Door, fitted with Check Draft and Mica Illumination—Screw Draft and Lever Handles—Deflector Ring—Air Tight Ash-Pit—Fitting faces **trued** until Air Tight.
Perfectly mounted and fitted—will not warp or buckle.
Nickel parts and Top Ornament add materially.

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None better.
Made of polished
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Ornamental,
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Powerful and
Simple in
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1903

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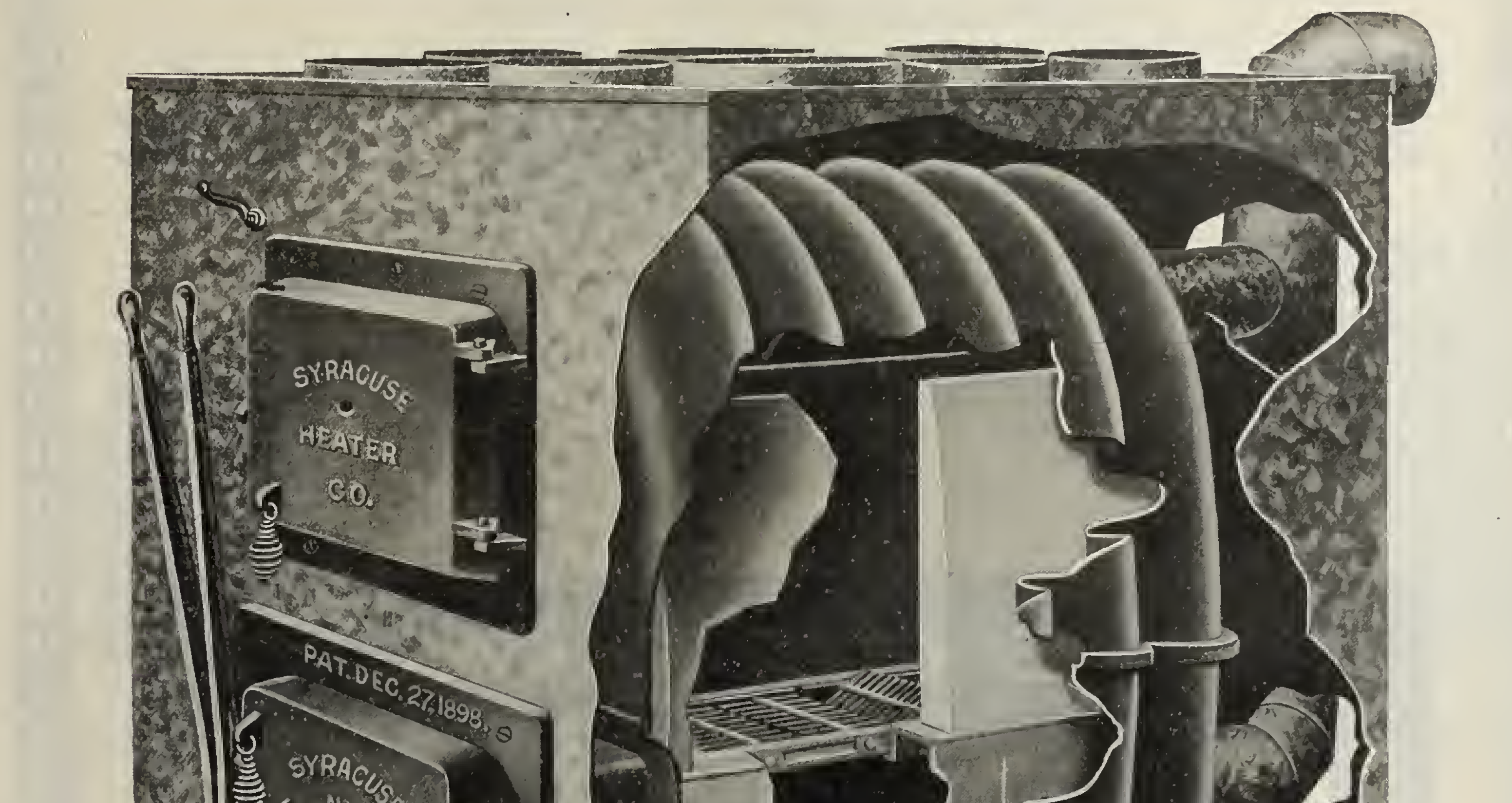
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PAT. DEC. 27, 1898.
SYRACUSE N.Y.
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H.M. Ford

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You will find it linked together
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43

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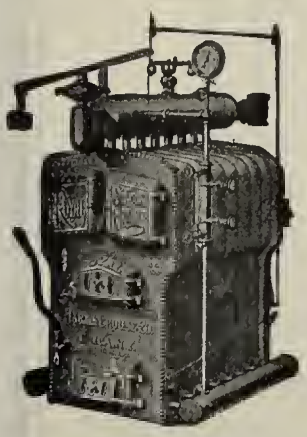

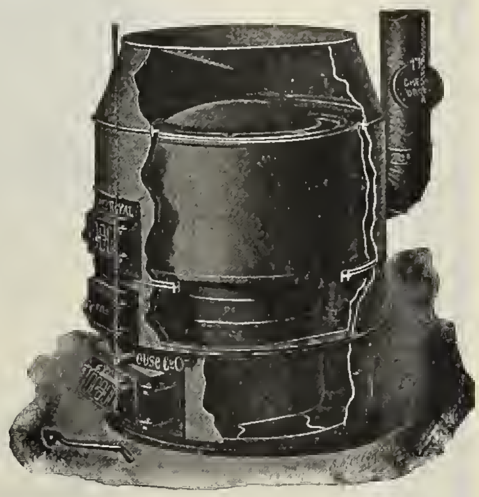

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Builders' Hardware,
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Molasses Gates,
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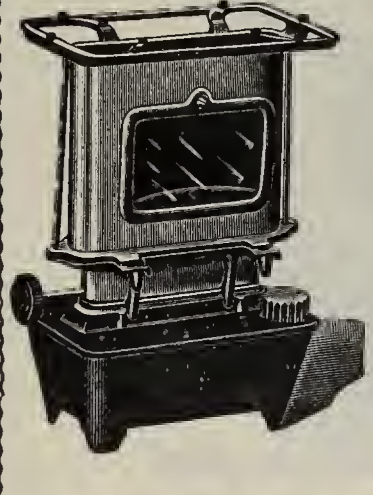
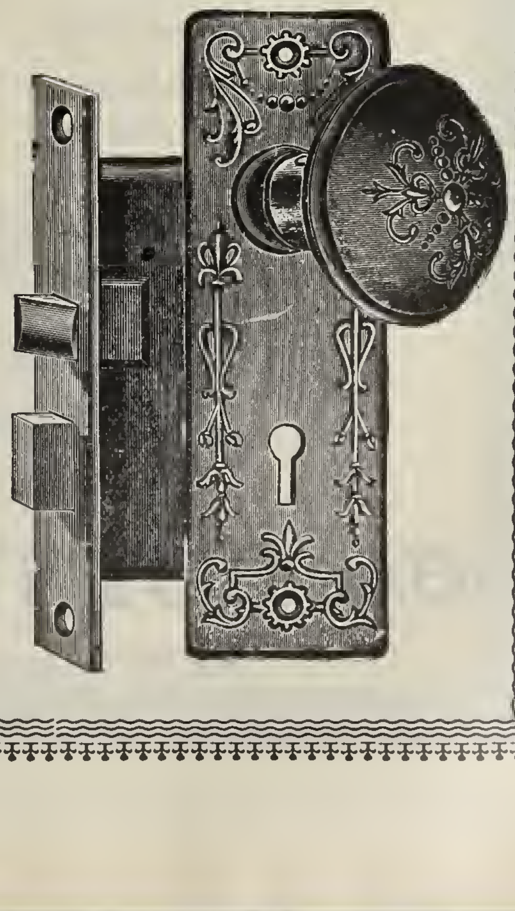
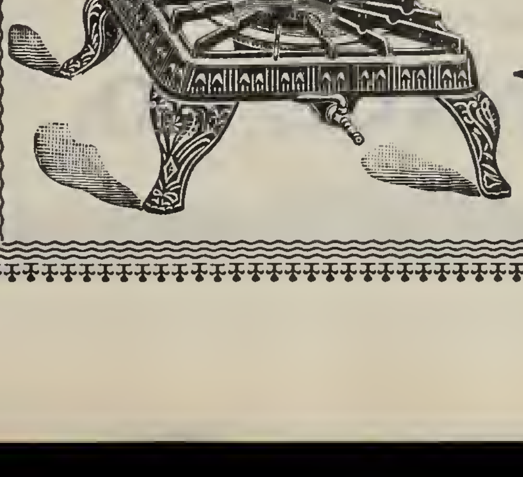
Hardware Specialties.

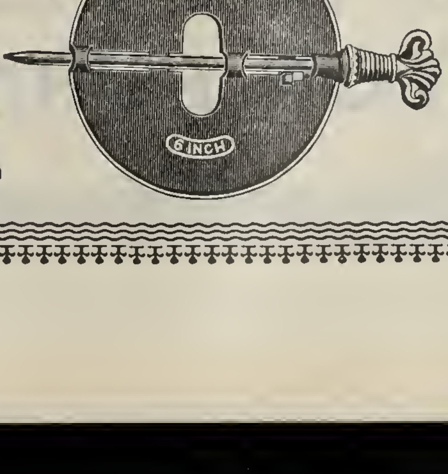
CLEVELAND, O.



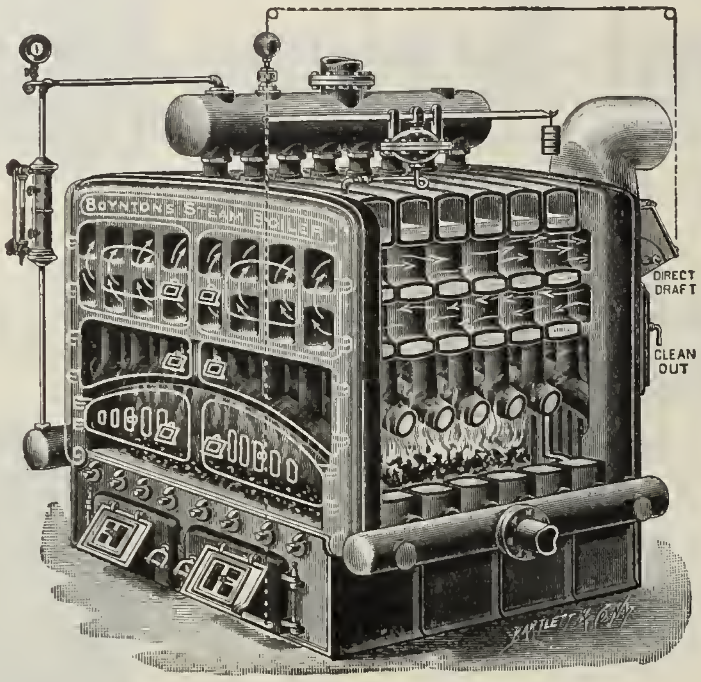
" Hudson " Design.







Some of Our 1902 Productions



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Sq. Ft. of
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Superior to
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Country it is
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Any Kind
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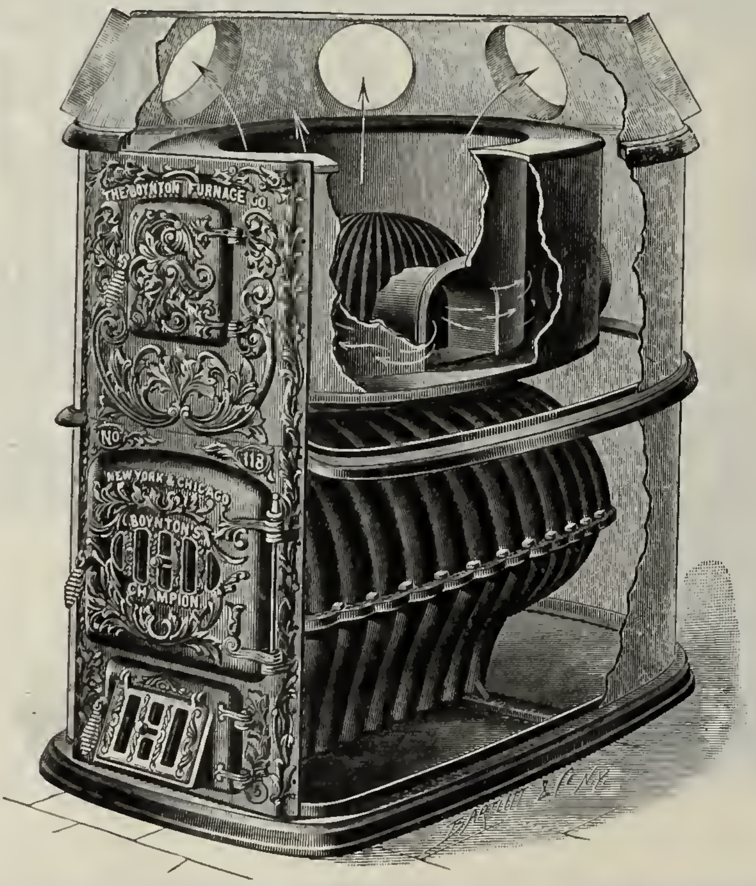
Building



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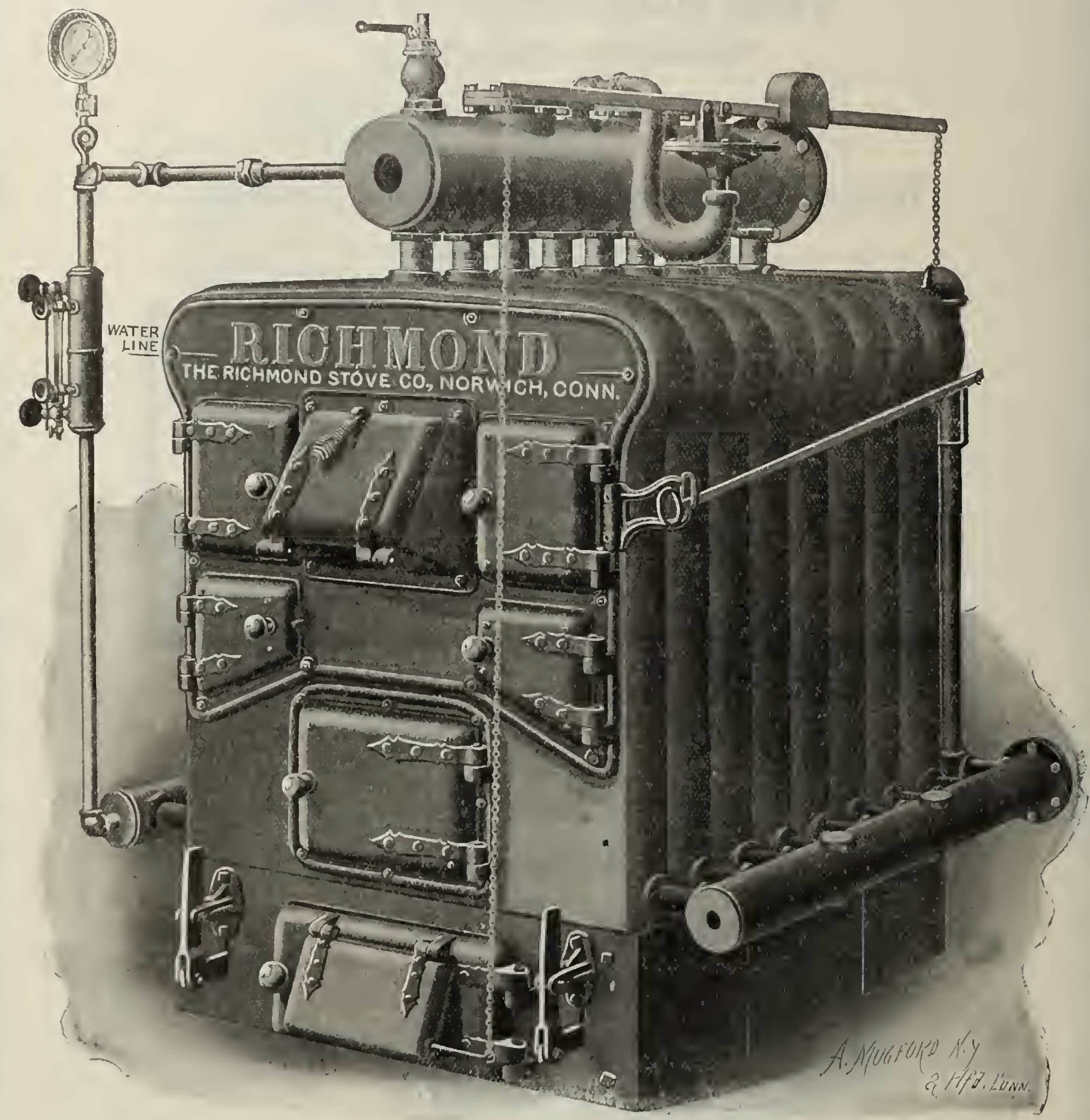
Heaters that HEAT.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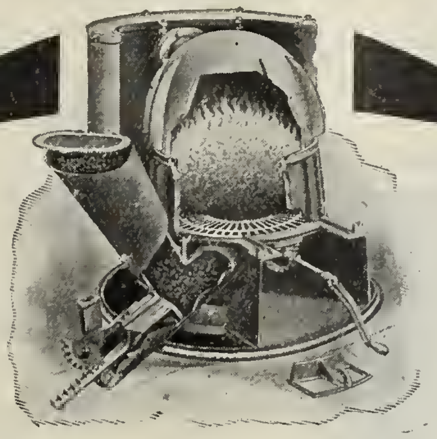
CHICAGO, Chicago Heater & Supply Co.
ST. LOUIS, Rumsey & Sikemeier.



PATENTED

Ask Yourself this Question:

Why should I not handle the Peck-Williamson Underfeed Furnace?

You will find it a hard question to answer.

And the more you look into the merits of the furnace, the harder it will be for you to answer it.

As a matter of fact, there is absolutely no reason why you should not be the one man in your town who handles the most sensible and logical furnace ever offered to the trade.

If you will speak quick and corral the agency for the Peck-Williamson Underfeed Furnace in your town, you will not only have the best furnace proposition in the world to offer to your customers, but we will give you a line of assistance that will simply give you the control of the furnace business in your section.

There are many things that furnace makers have tried for years to accomplish that have been achieved by the Peck-Williamson Underfeed Furnace, viz.:

A measurable saving in the cost of running a furnace.

A furnace that will burn the cheapest grades of fuel with no smoke, no soot, no clinkers and few ashes.

Above all, a furnace that will burn the minimum fuel and give the maximum amount of heat.

There is logic in feeding fresh coal into a furnace from underneath; it isn't a freakish idea.

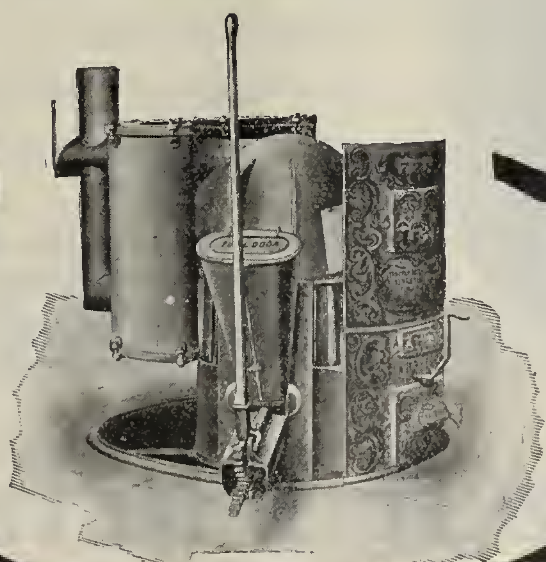
The coal is consumed more slowly and the process results in the actual consumption of the smoke itself, thus utilizing every particle of every heat unit contained in the coal.

If you accept the agency and push this furnace, you will gain the everlasting ill-will of the coal men in your town; but they don't make much money for you, so why should you not handle the Peck-Williamson Underfeed Furnace?

A furnace like this needs little talk from you to convince your customer. It talks eloquently. It appeals to the good sense and economical side of every man who sees it.

Our Handsome Booklet Free.

The Peck-Williamson Company
CINCINNATI, OHIO.



ATENTE

Ideal Premier Tank Heater.

Our New Ideal Premier Tank Heater

is now ready for the market, and we invite your critical examination of its various features of construction.

Send for 1902 profusely illustrated catalog.

AMERICAN RADIATOR COMPANY

Lake and Dearborn Streets,
Chicago, U. S. A.

New York, Philadelphia. Buffalo. St. Louis. Minneapolis. Denver.

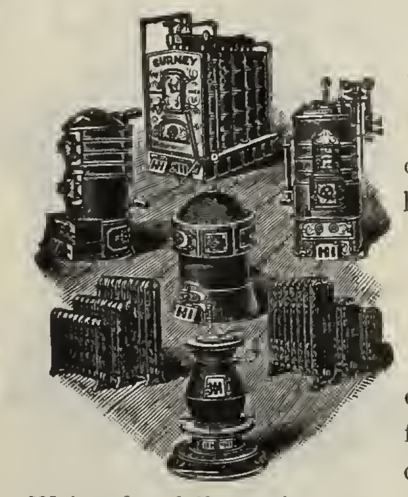
Looking Forward to the Fall

THE **BUSY SEASON** is coming, and soon will be here. If you have not decided what **furnace** to sell, **now** is the best time to settle that question. You will need to **advertise your furnace** before the season begins. **We** have the **furnaces** you **ought to handle,** and want to convince you of this fact. It will cost you nothing to investigate. Drop us a card and we will do the rest. Our **leaders** are the well known

Faultless, Hero, Comfort and Rival Furnaces

The Graff Furnace Co.

208 Water Street, New York



Absolutely Right.

"Gurney" Heaters are made in various kinds, in all sizes, but only in one quality, **the best.** We never sacrifice quality for price—and the prices are no higher than for many inferior makes.

"GURNEY" HEATERS,

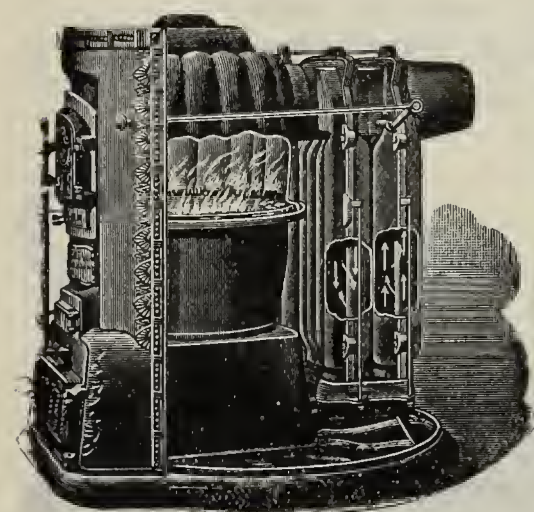
BRIGHT IDEA, DORIC and 400 SERIES,

offer you more business opportunities than any other heater—the best apparatus for each class of wants, which can be easily sold; not on claims, but on what it has done and is daily doing; with prices no higher than those of many inferior makes. Write for full particulars and latest trade catalogue.

Gurney Heater Mfg. Co.,

74 Franklin St., Boston. *111 Fifth Ave., New York City.*

Western Selling Agents, James B. Clow & Sons, 358 Franklin St., Chicago, Ill.



EASTERN SELLING AGENTS:
GURNEY & CO.,
Washington, Hanover and Elm Streets, Boston, Mass.

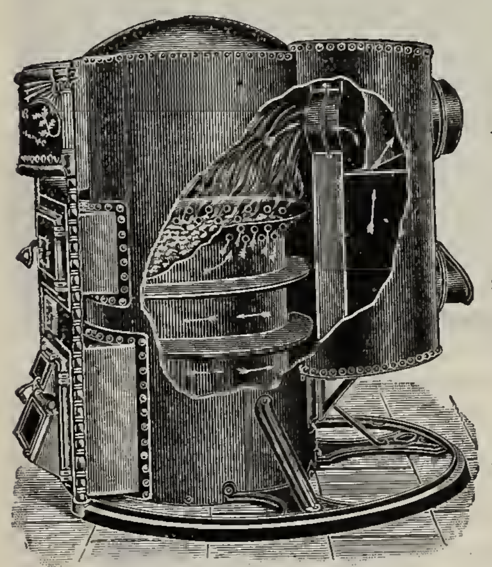
IT IS A FACT THE

BENGAL

WILL WORK WHERE OTHER FURNACES FAIL. BOOKLET GIVES FURTHER PARTICULARS. WRITE FOR IT.

FLOYD, WELLS & CO., Royersford, Pa.

NEW YORK OFFICE, 210 WATER ST., R. W. HILLMAN, Manager.



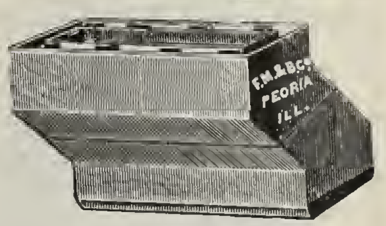
WEIR ALL STEEL GAS AND SOOT CONSUMING FURNACE.

THE HEAVIEST STEEL FURNACE MADE.

Absolutely gas and dust tight. A great heat-producer but a fuel saver.

MANUFACTURED BY

THE MEYER FURNACE CO.,
1300-1304 S. Washington St.,
SEND FOR CATALOGUE. PEORIA, ILLS.



"The Handy Furnace Pipe."

MADE WITH A VIEW OF BEING SAFE.

The saving of labor in putting it up really makes it the cheapest hot air pipe on the market.

MANUFACTURED BY

F. MEYER & BRO. CO.,
SEND FOR CATALOGUE. PEORIA, ILLS.

STOVE REPAIRS

Bought from us entitle the purchaser to a 1000 Mile Book FREE on any railroad.

HAVE YOU RECEIVED ONE OF THEM? WRITE FOR PARTICULARS.

CHAS. C. HEATH & CO., - -

HEADQUARTERS FOR

WICK RINGS

For all Blue Flame Oil Stoves made—at startling low prices.

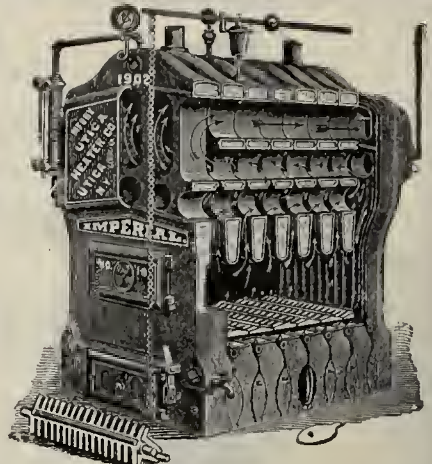
ELECTRIC BLUE FLAME COOKS

Are what you want for Summer trade.

Philadelphia and Baltimore.

UTICA HEATER CO.
UTICA N.Y.

SUPERIOR Steel Furnaces.
SUPERIOR Heaters.
UTICA Heaters.
KEYSTONE Boilers.
IMPERIAL Sectional Boilers.
IMPERIAL Round Boilers.
IMPERIAL Radiators.
AUBURN Round Boilers.
Double Safety Furnace Pipe.
Heating Contractors' Supplies.



Ask for our furnace and boiler catalogues. They illustrate and describe our very extensive and complete lines of heating apparatus for warm air, steam or hot water.

Our unexcelled manufacturing and shipping facilities enable us to give your orders our very careful attention, with prompt shipments. Prompt shipments in themselves are often strong talking points.

Exclusive agencies given and protected.

Send for discounts—TO-DAY.

UTICA HEATER COMPANY, General Offices, UTICA, N. Y.

NEW YORK CITY,	CHICAGO,	BOSTON,
106-108 Beekman Street.	33 Dearborn Street.	24 India Square.

Emperor Furnaces

FOR WOOD.

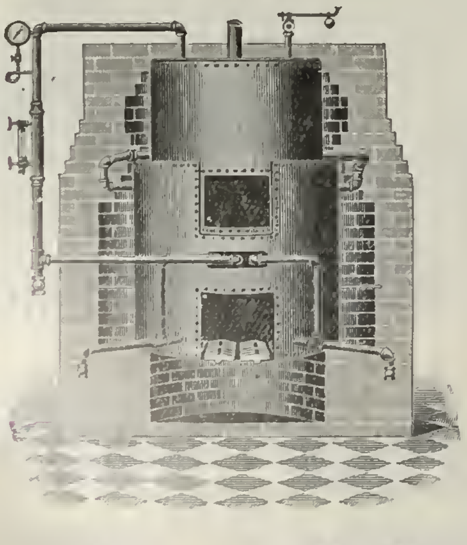
Simple, Safe, Durable. Economical in Fuel.

The Best and Cheapest Line of Wood Furnaces. . . .
Furnished for either Brick or Galvanized Iron Casing

SEND FOR CATALOGUE.

Bergstrom Bros. & Co.

NEENAH, WIS.



THE HAXTUN

A Steel Brick-Set Boiler for Steam and Water Heating—Hard or Soft Coal.

HAS AN ESTABLISHED REPUTATION.
SOLD ON MERIT.
PRICES TO THE TRADE ONLY.

KEWANEE BOILER COMPANY

Chicago Store, 169 E. Lake St. KEWANEE, ILL.

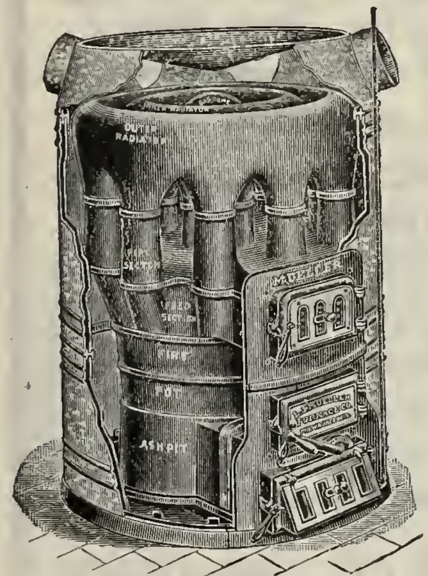
Eastern Representatives: MODEL HEATING CO.,
Philadelphia, Pa.
New York, N. Y.
Buffalo, N. Y.
Boston, Mass.

YOU WILL MAKE NO MISTAKE

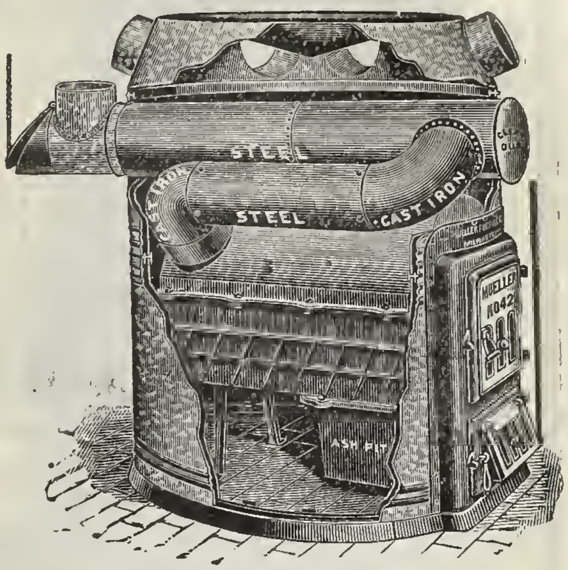
IN SELECTING

MUELLER FURNACES

NONE EQUAL.



All Cast Iron Double Radiator.



For Long Wood.

Made In All Styles—For All Kinds of Fuel.

WRITE FOR CATALOGUE AND PRICES.

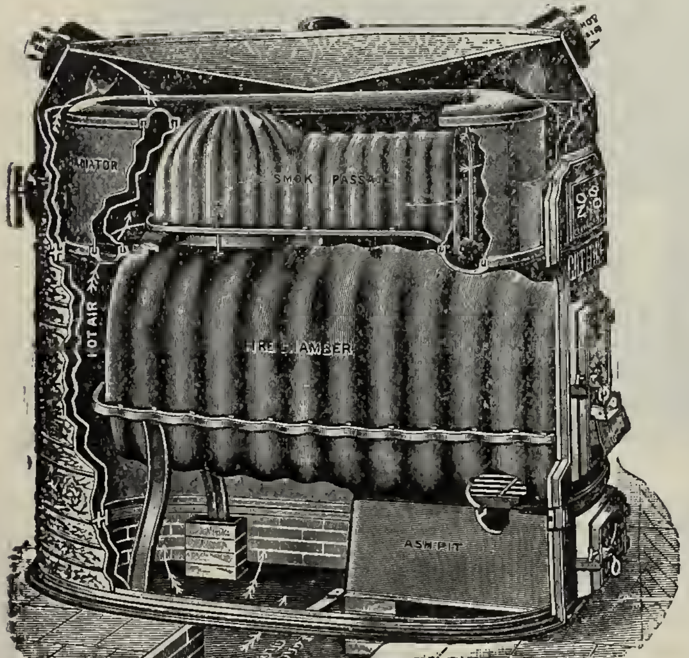
EVERYTHING IN THE HEATING LINE.

ESTABLISHED 1857.

L. J. MUELLER FURNACE CO.

190 REED STREET, MILWAUKEE, WIS.

GILT EDGE



stands for best when applied to furnaces. The many dealers who have installed and the thousands of householders whose homes have been heated by our furnaces show they like the Gilt Edge, as will be seen by the testimonials they have written. Let us send you a few of them.

The Keystone Joint used in Gilt Edge Furnaces is the only permanent gas tight steel and cast iron joint on the market.

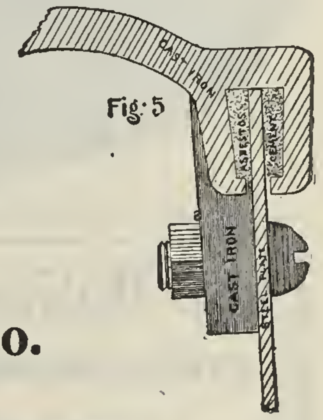
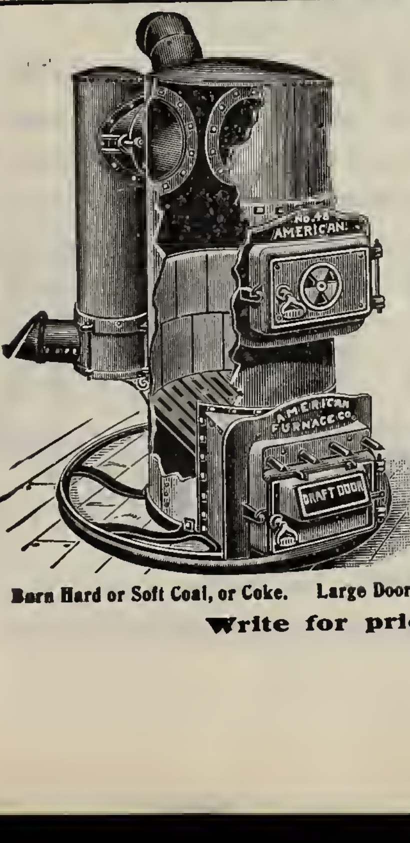


Fig. 5

R. J. Schwab & Sons Co.

MILWAUKEE

About Fire Pots.



Burn Hard or Soft Coal, or Coke. Large Doors.

We formerly lined our fire pots with cast iron—then they cracked and warped. Now we use fire brick for lining and will guarantee it for five years. The lining is replaced through the fire door.

The **AMERICAN FURNACE** is made strong in places where other furnaces have proven weak; it is made of heavy steel and riveted tight like a boiler. Will burn any kind of fuel.

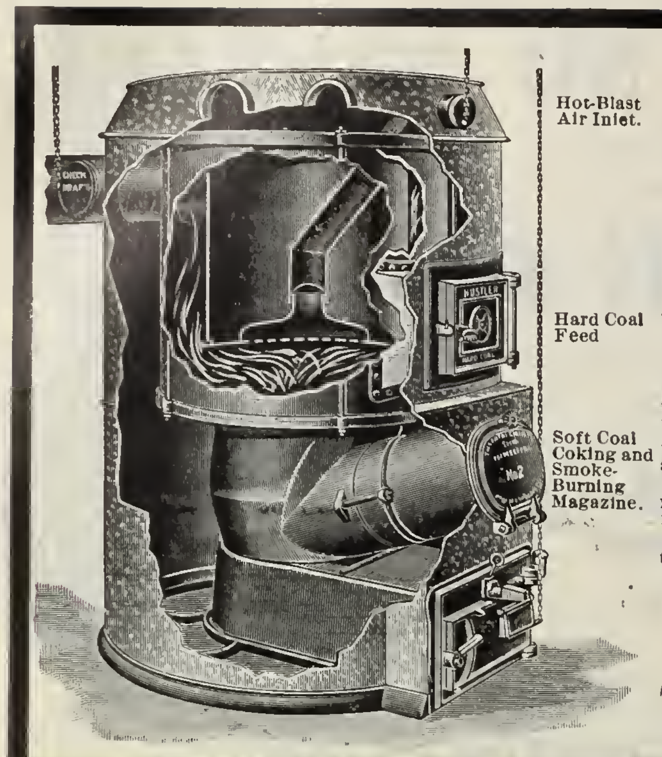
You can only build up a permanent furnace business by handling a first-class furnace. We manufacture for the better class of trade.

Large Radiators, easy to clean out.

The American Furnace Co.,

1911-13 PINE STREET, . ST. LOUIS, MO.

Write for prices and secure the agency before the other fellow gets it.



THE PATRIC FURNACE

Guaranteed to Burn Successfully

SOFT COAL, HARD COAL, COKE and WOOD.

SPECIAL FEATURES:

The **Coking and Smoke-Burning Magazine** used on the Patric Furnace has been a great success for twenty years. The prospective customer is attracted at once by this feature, and those who have used it are loudest in its praise. It cokes the soft coal, and burns largely the volatile parts of the smoke before the fuel enters the main fire bowl. Clinkers are easily removed through the magazine without disturbing the fire. The accessibility that this magazine affords for this and other purposes is worth much to the user.

A **separate feed door** is provided for hard coal or coke. Either one of these fuels may be used alone or soft coal may be used in the magazine with hard coal or coke in the main fire-bowl at the same time.

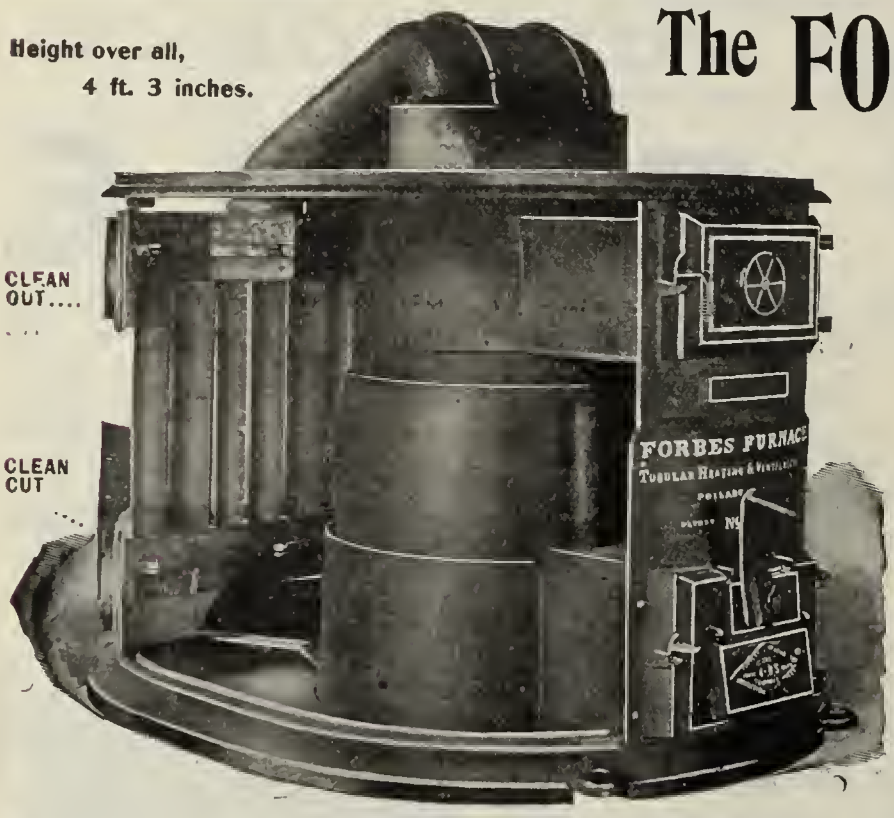
The **Hot-Blast** device used on the Patric Furnace is simple, effective in aiding combustion, and directs the flame to the surfaces where it will do the most good.

The **Material** used is of the best. All castings made in our own foundry.

SEND FOR NEW CATALOGUE AND PRICE LIST.

THE PATRIC FURNACE CO., Springfield, O.

Height over all,
4 ft. 3 inches.



The FORBES FURNACE.

You run no risk in putting in the

Forbes Furnace.

When properly installed we guarantee them in every case.

They are constructed entirely of cast iron.

No sheet iron drums.

Our radiating tubes are ⅛ in. thick, and will wear for years.

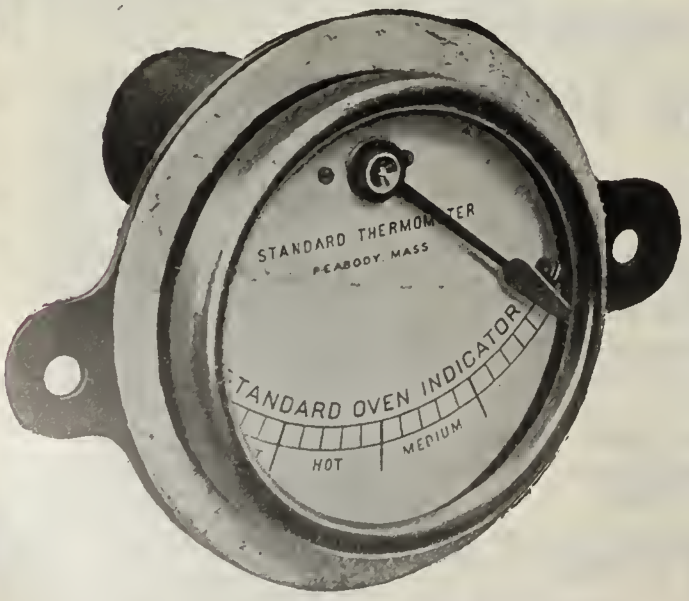
Specially suited for low cellars.

SEND FOR CATALOGUE AND FULL PARTICULARS.

Tubular Heating & Ventilating Co.,
228 Quarry St., Philadelphia, Pa.

The Helios-Upton Co.'s

First on the Market. 150,000 Sold.



No. 420, with Projecting Lamina Cover.
3 inches in diamater.

STANDARD Oven Indicator

has a dial graduated in the simplest possible manner, as can be seen. This graduation was adopted because every oven has its own peculiarities, and an indicator adjusted to one oven might be incorrect for another. The *Standard* can be adjusted to any oven and has no complicated parts. Made in 3 styles.

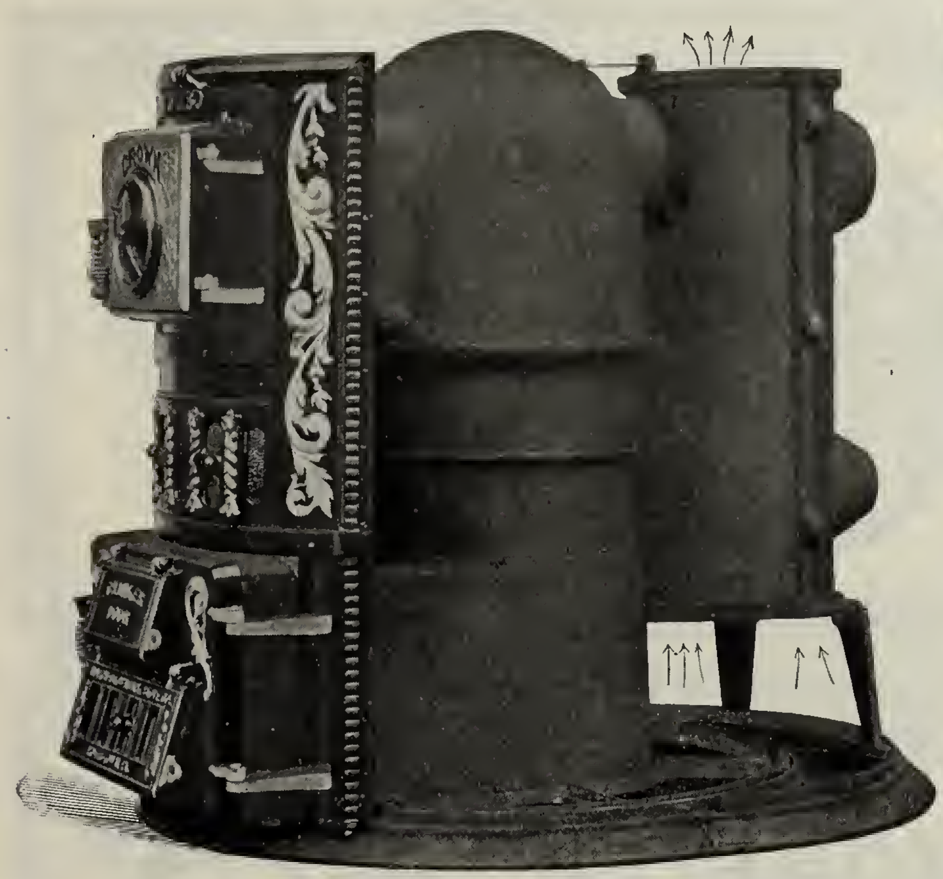
Send for circular.

HELIOS-UPTON COMPANY,
Peabody, Mass., U. S. A.

CRAWFORD BOILER
for Steam: for Water

Our new line of Crawford Boilers are now ready, in three sizes, Steam or Water; they embody new features. These boilers are what you have been looking for. A steam fitter's construction, perfect in every detail. Deep fire pot, attractive design, and superior castings. We want you to know all about them. Send for descriptive circular giving full information. Correspondence and inspection invited.

WALKER & PRATT MFG. CO.
31-35 Union Street, -- BOSTON, MASS.



CROWN FURNACES

All-cast front.
For hard or soft coal.
Low-down type in four sizes.
Slightly oval in form.
Adapted for heating the finer class of dwellings.
Drums of heavy steel, closely riveted.
Castings extra heavy.
Deep sand joint and deep ash pit.

March-Brownback Stove Co.
POTTSTOWN, PA.

OFFICE OF
M. H. SULLIVAN & SON,
HIGH CLASS PAINTING AND DECORATING.
FALL RIVER, MASS., January 10, 1902.

DIGHTON FURNACE CO., Taunton, Mass.

Dear Sirs:—The "Dighton" Furnace with Hot Water Combination Attachment which was installed in my residence a couple of years ago is very satisfactory in every way.

It requires very little care and uses less fuel than any furnace I have ever had any experience with.

Several of my friends now use the "Dighton," having bought through my recommendation, and they speak as highly of it as I do and recommend it especially for its economy of fuel.

Yours truly, M. H. SULLIVAN.

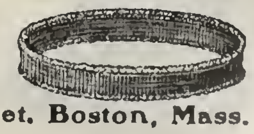
BRAND STOVE CO.

STOVES, RANGES and FURNACES.
SEND FOR CATALOG.
MILWAUKEE, WIS.

STARTING RINGS For All Kinds of BLUE FLAME STOVES.
Small size, 40c. per doz. Medium size, 55c. per doz.
Large size, 75c. per doz.

In ordering mention diameter of rings and name of stove.

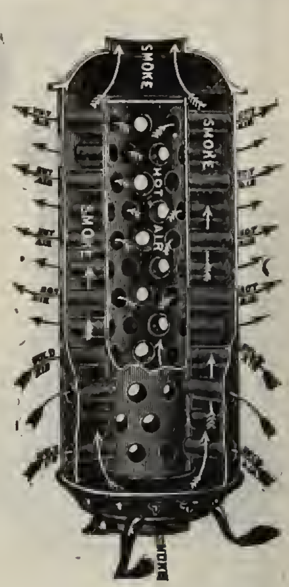
THE S. M. HOWES CO., 40, 42, 44, 46 Union Street, Boston, Mass.



IS IT SO?

A Tea-Kettle Boils Quicker on my Chimney than on my Stove.

It is said that a tea-kettle will boil quickest on top of a chimney. However that may be, all agree that there is too much heat wasted there. Nothing but the cross tube ***ROCHESTER RADIATOR*** has ever trapped it. If you were to heat a poker, would you hold it at the side of the flame or over the top? Or would you cook food on the side of a cook-stove in preference to the top? It is thus with the ***ROCHESTER RADIATOR***, which takes the heat from the top of the current and not from the side. The cross tubes cool the hot current, just as you would blow across a cup of tea to cool it, only there are from 96 to 120 such currents in operation.



ROCHESTER RADIATOR CO.,

100 Furnace St., ROCHESTER, N. Y.

4866 sq. ins.

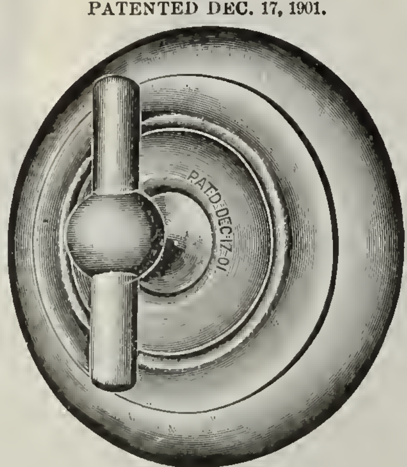
SOMETHING NEW....

Sheet Steel Draft Registers with Screws Complete.

PATENTED DEC. 17, 1901.

Threads are cut and disk is securely fastened
Without cotter pins or washers,
Yet it is loose or tight as wanted.

SEND FOR PRICES.



STOCK SIZES.

2½ in.	4 in.
3 in.	4⅛ in.
3¼ in.	4½ in.
3½ in.	5¼ in.
3¾ in.	

Any size made to order in quantities.

Manufactured by **The H. A. MATTHEWS MFG. CO., Seymour, Conn., U. S. A.**

ACME

OVEN THERMOMETER

Just What You Have Been Looking For.

A Reliable Thermometer at a Reasonable Price.

Patented March 11, 1902.

Manufactured By

Evans Stamping & Plating Company,

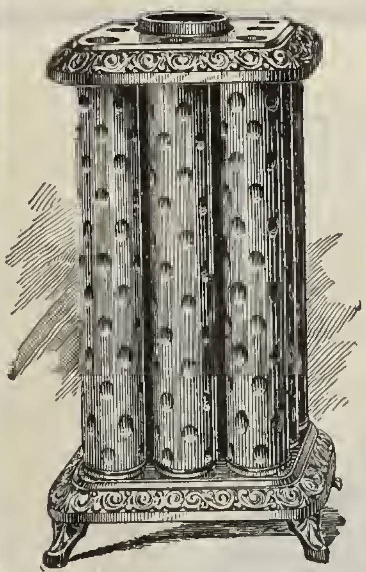
TAUNTON, MASS.

C. H. MATTHEWS, Detroit, Mich.,
WESTERN AGENT.

WINCHESTER

The railroads accept heaters as ordinary castings. Ordinary castings, however, are not always heaters, although some people label them as such. The "WINCHESTER" is not that kind. It is of the kind that gives satisfaction to those who want heat. Made by Smith & Thayer Company, Boston, Mass ; 105 Beekman St., New York.

HEATER.

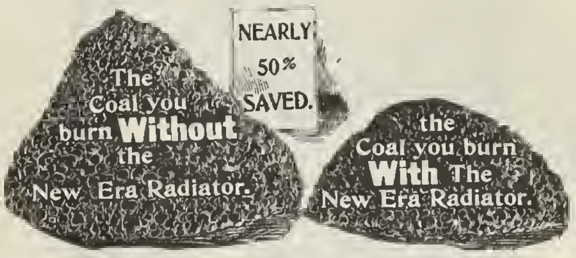


COAL WILL BE HIGH.

Don't you think if you can show your customers an article next fall that will enable them to get as much heat out of one ton of coal as they did last winter out of two tons, they will be glad to buy?

New Era Radiators

WILL DO IT.


The Coal you burn Without the New Era Radiator.
NEARLY 50% SAVED.
the Coal you burn With The New Era Radiator.

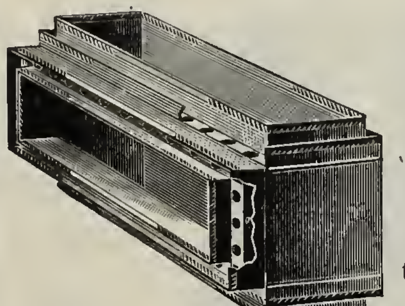
Obtain full information early and be prepared to present facts and meet the demand.

WILMOT CASTLE & CO., 76 Elm Street, Rochester, N. Y.

FURNACES

EXCELSIOR HEATING SPECIALTIES

PIPE



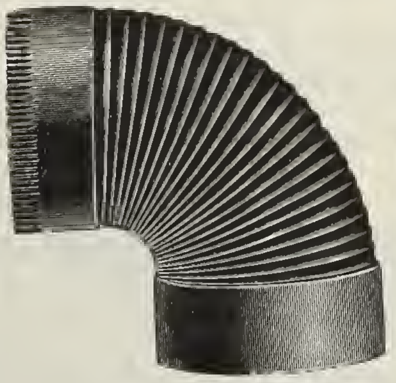
Excelsior { FURNACE PIPE,
HOT AIR REGISTERS,
STOVE PIPE ELBOWS,

ARE ALL SELLING AT

MUCH BELOW

their real value.

This is also true of many other things which we make, as our Quotation Sheet will demonstrate.



EXCELSIOR IDEAL ELBOW.

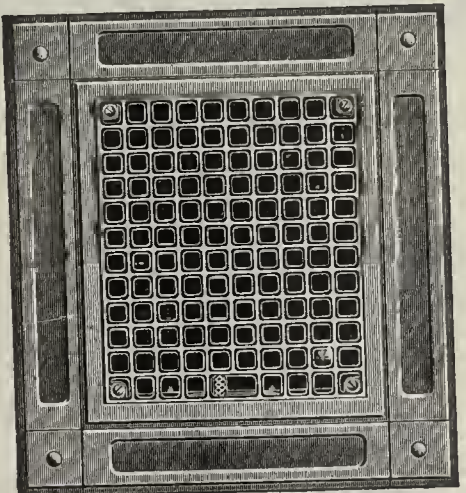
ELBOWS

EXCELSIOR STEEL FURNACE CO.
38-40 W. MONROE ST.-CHICAGO.

REGISTERS

H. & C. WROUGHT STEEL REGISTERS

FURNISHED WITH WROUGHT STEEL or WROUGHT BRASS FACE PLATES, AND IN ALL FINISHES.



STRONG, LIGHT, HANDSOME in SIMPLICITY of DESIGN.

GENERAL SALES AGENTS
STANLEY WORKS
New Britain, Connecticut.

THE HART & COOLEY CO., New Britain, Conn. 79 Chambers St., New York. 19 Lake St., Chicago.

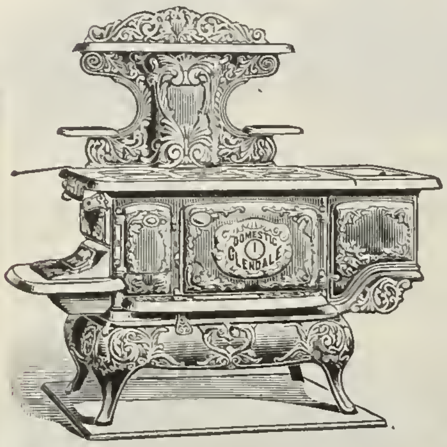
REFRIGERATORS,
BLUE FLAME OIL STOVES,
GASOLINE STOVES.

LARGEST JOBBERS
in
NEW ENGLAND.

GAS RANGES,
FURNACES, STOVES,
RANGES AND REPAIRS.

HENRY N. CLARK CO., 56 and 58 UNION ST., **Boston, Mass.**

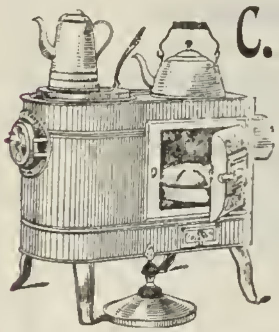
GLENDALE
Stoves and Ranges



Manufactured by
SOMERSET STOVE FOUNDRY CO.,
SOMERSET, MASS.
Send for a Sample.

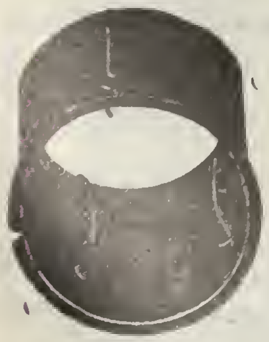
Going to put some new ranges on your sample floor this Spring? :: :: To make them show up just right they should be mounted on Independent Stove Casters. :: :: :: They don't cost much. Write us. :: :: :: :: ::

INDEPENDENT
REGISTER CO.,
152 Champlain St., CLEVELAND, O.



C. H. Cosby's
PATENT AIR TIGHT BAKER AND HEATER.
Agents wanted in every town and city. Write for particulars.
C. H. Cosby,
423 W. Broad,
Richmond, Va.

THE S. & S. PATENT
Stove Pipe Thimble



Locks the Pipe from Pulling Out, and from Pushing In and Closing the Draught. Will last a lifetime. Nothing to wear out, and costs but a trifle. *Send for sample* and prices.

City Forge and
Iron Works,
DAYTON, OHIO.

HOME COMFORTERS FOR

"NEW PROCESS" AND "STANDARD" OIL HEATERS.
MADE BY THE STANDARD LIGHTING CO.
CLEVELAND OHIO.
Sold by Jobbers and Dealers everywhere.

I Will Give the Public the Benefit.

Having completed patterns for my 1902 line, I will close out my last year's pattern of the celebrated

400 LB. WILLARD STEEL RANGE for $15.00.

This is Less than 4c. per pound.

They have six 8 inch lids. Oven, 17 x 21 x 12. Top Cooking Surface, 30 x 36. Large Warming Closet. 15 gallon Reservoir. Duplex Grate, Burns Wood or Coal. Lined throughout with Asbestos.

EVERY ONE GUARANTEED. BUY NOW AND SAVE 100%.
Write for Free Descriptive Circular and Testimonials.
"FIRST COME—FIRST SERVED."

WM. G. WILLARD,
619-621 N. 4th St., - - St. Louis, Mo.

STOVE DEALERS WILL SAVE MONEY IF BUYING FROM THE
Metropolis Sheet Metals and Stove Repair Co.
MAIL ORDERS PROMPTLY FILLED.
Manufacturers of GAS STOVES, STOVE PIPES, ELBOWS, DRUMS, Etc.
AND DEALERS IN
A FULL LINE OF STOVE REPAIRS, UP TO DATE.
Write for Prices. 261-261½ Springfield Ave., Newark, N. J.

STAMFORD FOUNDRY COMPANY

MAKERS OF

RANGES COOKING AND HEATING STOVES
HOT-AIR AND COMBINATION AIR AND
WATER FURNACES
LAUNDRY STOVES CONFECTIONERS' STOVES
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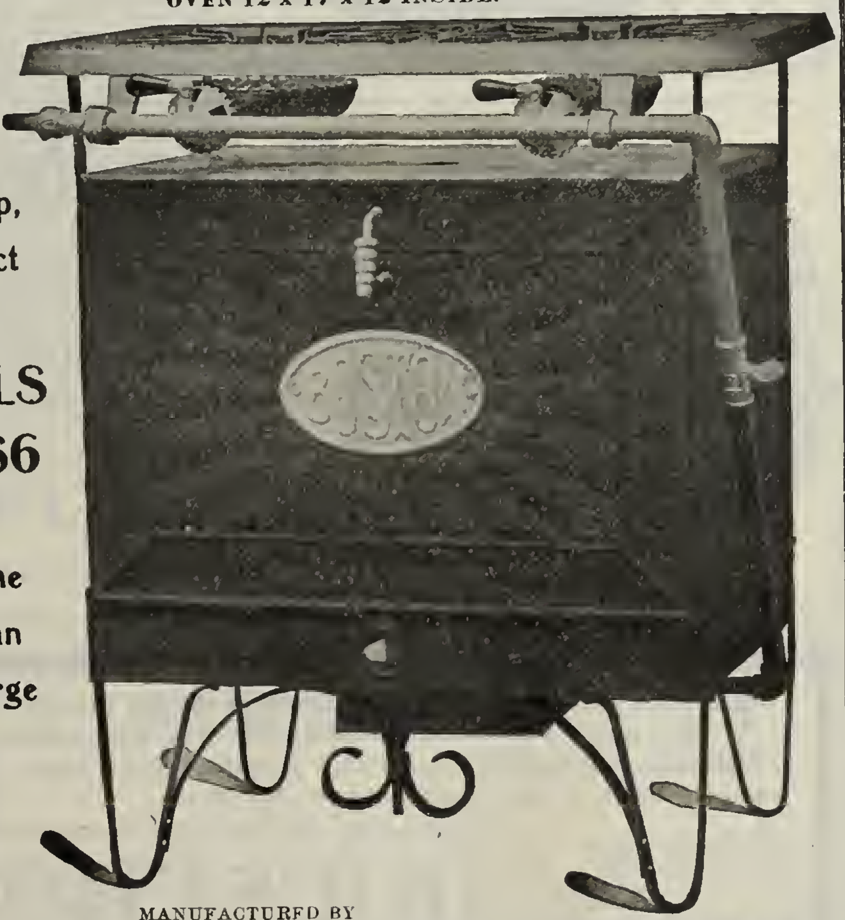

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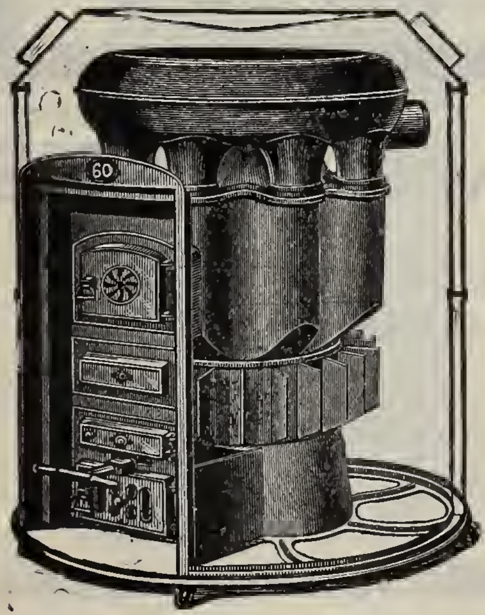

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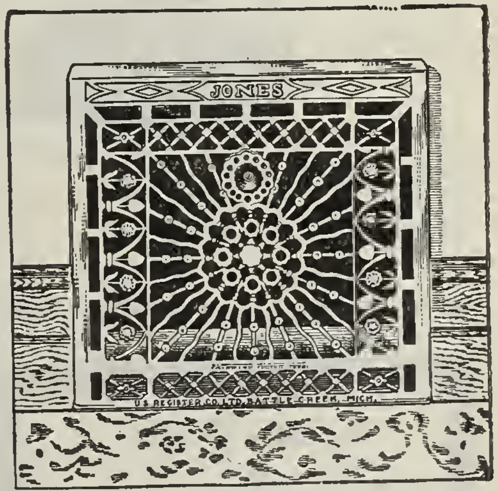
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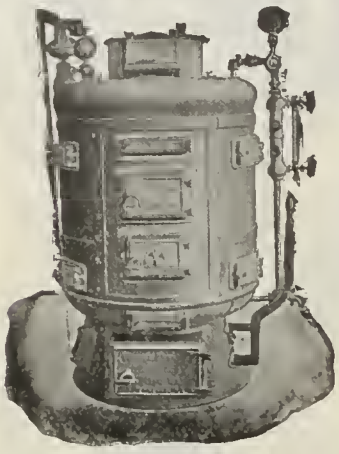

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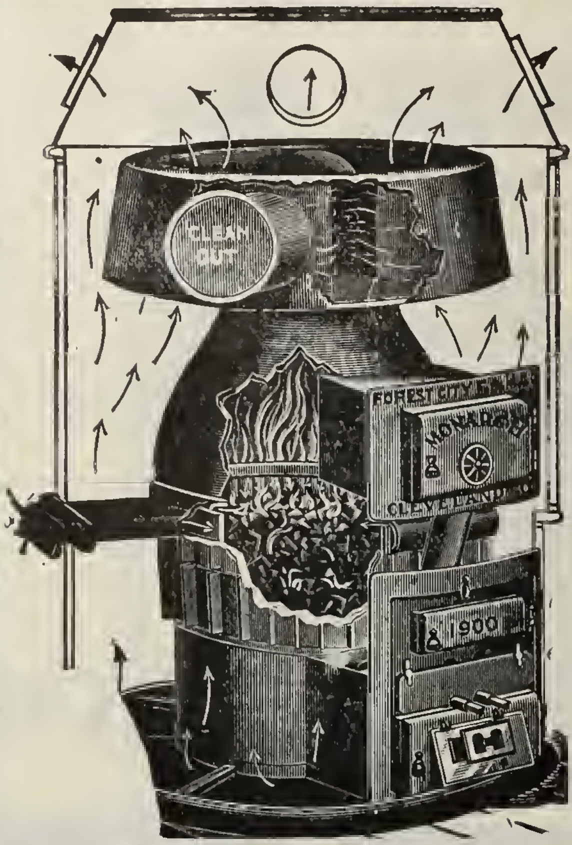

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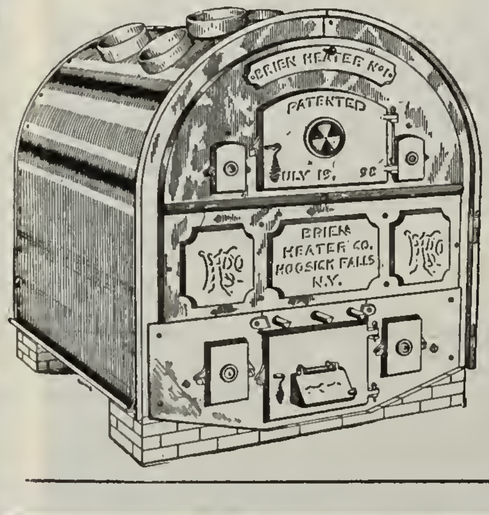

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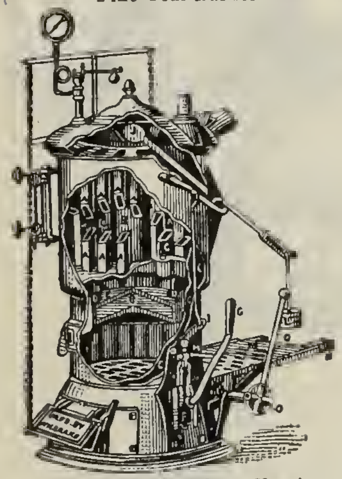

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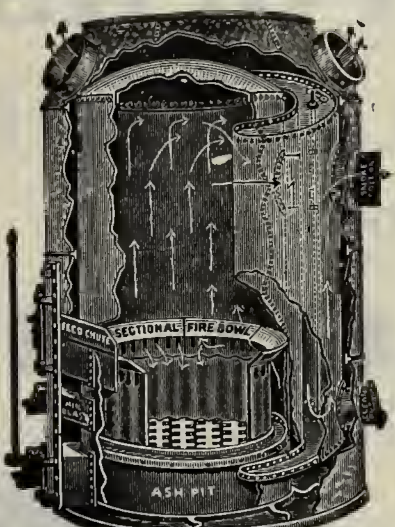

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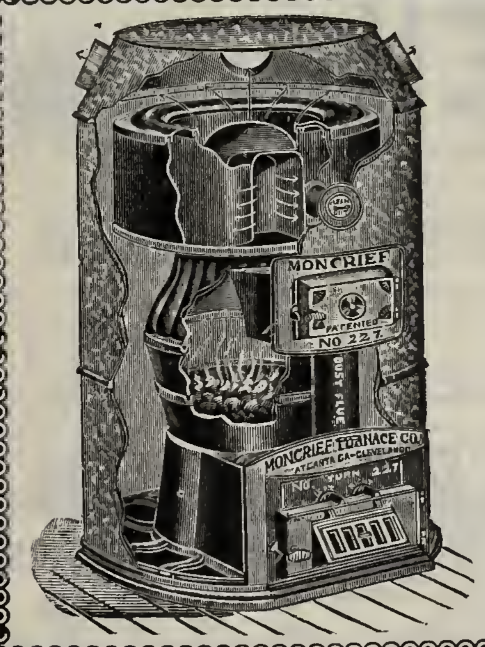

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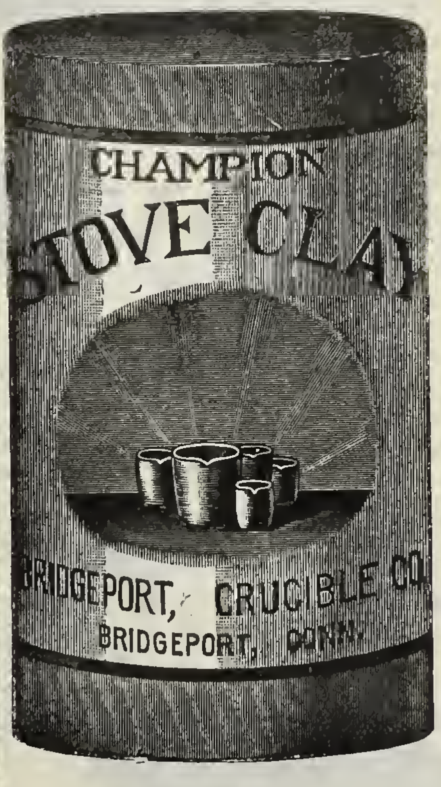
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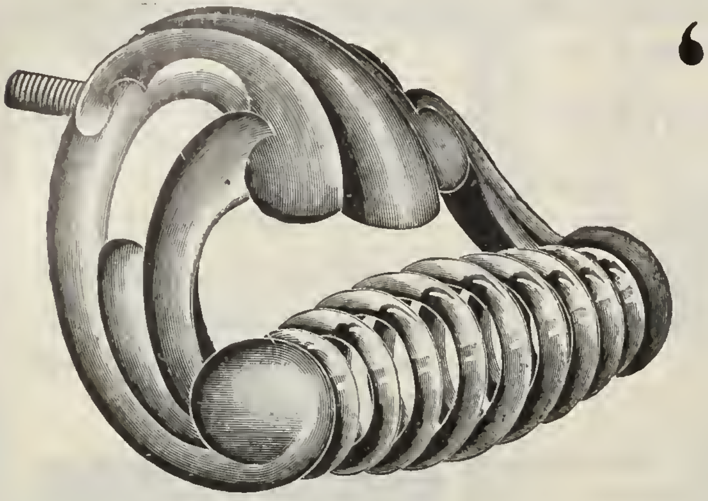

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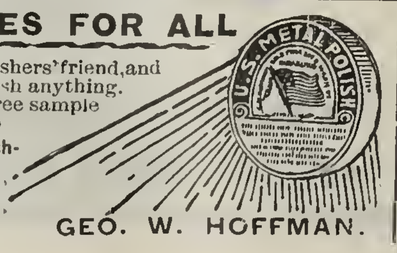

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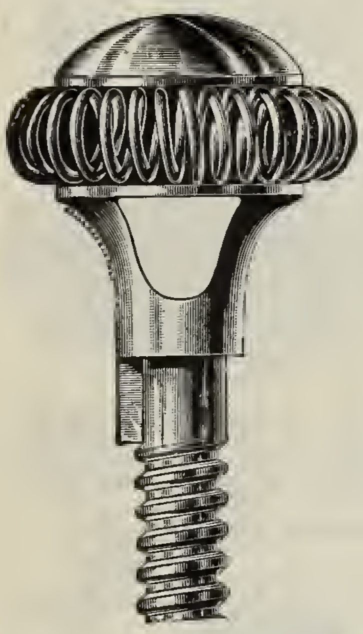

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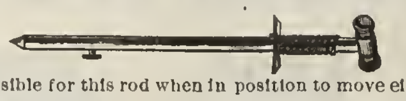

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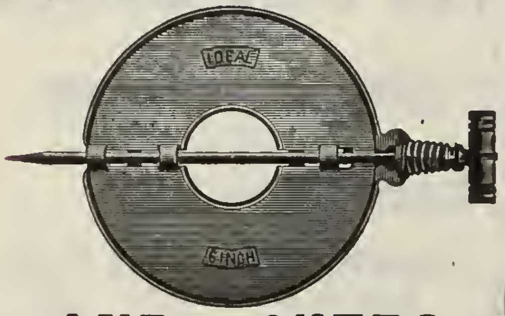

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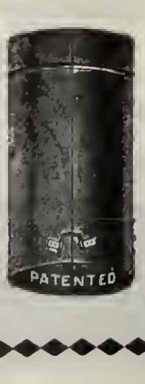

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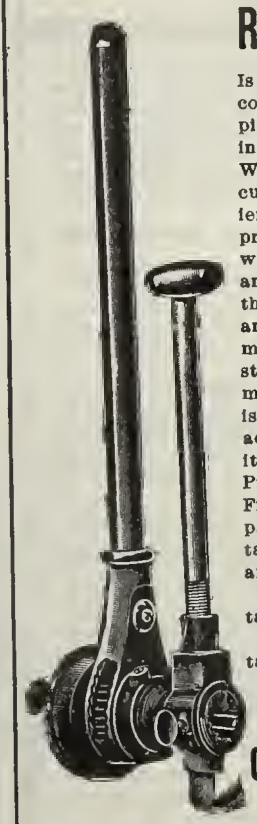

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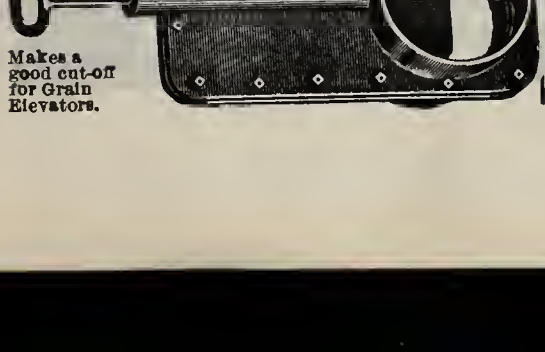

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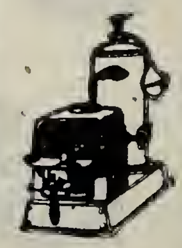

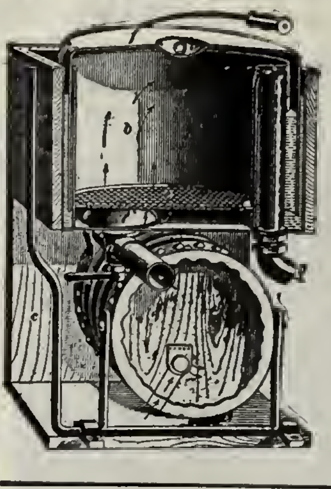

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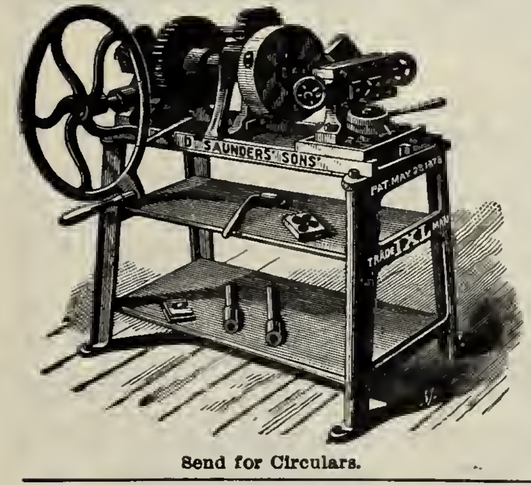

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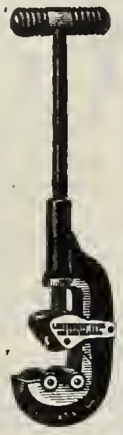

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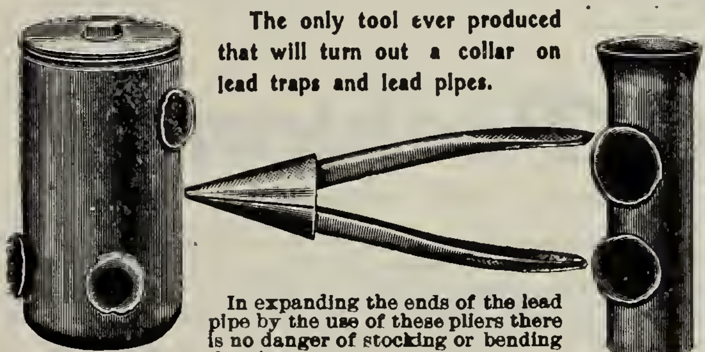
The only tool ever produced that will turn out a collar on lead traps and lead pipes.



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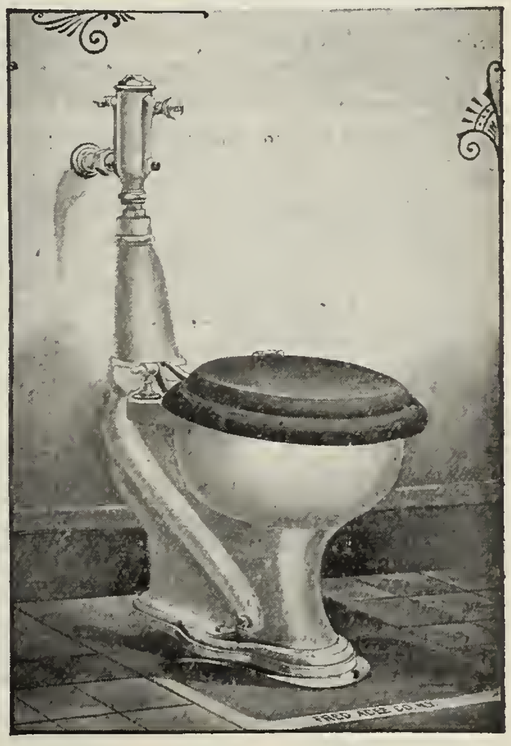
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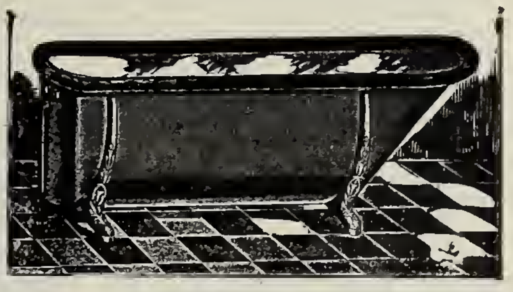

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This volume is devoted to practical plumbing and house drainage, treating many of the most difficult problems arising in the practice. Much of the subject-matter is presented in the form of questions and answers. The answers, as a rule, consist of descriptions of methods of properly installing work, accompanied by appropriate illustrations, which make the text clear. Incorrect ways of doing work are also pointed out, accompanied by examples of successfully installed plumbing and drainage. **Hot water circulation and hot water supply in buildings** are treated at considerable length.

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- Running Vent-Pipe in Improper Places — Connecting Soil-Pipes with Chimney-Flues—By-Passes in Trap-Ventilation, etc.
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- Unreliability of Heated Flue as a Substitute for Proper Trapping.
- Need of Plans in Doing Plumbing-Work.

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- Ground-Water Drainage of a City House.
- Fresh-Air Inlets.
- The Location of Fresh-Air Inlets in Cities.
- Air-Inlets on Drains.
- The Proper Way to Lay Stoneware Drains.
- The Tightness of Tile-Drains.
- Danger of Soil-Pipe Terminals Freezing unless Ends are without Hoods or Cowls.
- Objection to Connecting Bath-Waste with Water-Closet Trap.
- How to Adjust the Inlets and Outlets of Traps.
- How to Protect Trap when Soil-Pipe is used as a Leader.
- Size of Ventilating-Pipes for Traps.
- How to Prevent Condensation Filling Vent-Pipes.
- How to Prevent Accidental Discharge into Trap Vent-Pipe.
- Why Traps should be Vented.

MISCELLANEOUS.

- Syphoning Water through a Bath-Supply.
- Emptying a Trap by Capillary Attraction.
- As to Safety of Stop-Cocks on Hot Water Pipes.
- How to Burnish Wiped Joints.
- Admission to the New York Trade Schools.
- Irregular Water Supply.
- Hot Water from the Cold Faucet, and how to Prevent it.
- Disposal of Bath and Basin Waste Water.
- To Prevent Corrosion of Tank Lining.
- Number of Water Closets Required in a Factory.
- Size of Basin Wastes and Outlets.
- Tar Coated Water Pipe Affect Taste of Water.
- How to Heat a Bathing-Pool.
- Objections to Galvanized Sheet Iron Soil-Pipe.
- To Prevent Rust in a Suction Pipe.
- Automatic Shut-Off for Gas Pumping Engines, when Tank is Full.
- Paint to Protect Tank Linings.
- Size of Water-Pipes in a House.
- How to Make Rust Joints.
- Covering for Water-Pipes.
- Size of Soil-Pipe for an ordinary City House.
- Where to Place Burners to Ventilate Flues by Gas Jets.
- How to Prevent Water Hammer.
- Why a Hydraulic Ram does not Work.
- Proper Size of Water-Closet Outlets.
- Is a Cement Floor Impervious to Air?
- Two Traps to a Water Closet Objectionable.
- Connecting Bath-Wastes to Water-Closet Traps.
- Objections to Leaching Cesspool and Need of Fresh Air Inlet.
- The Theory of the Action of Field's Syphon.
- How to Disinfect a Cesspool.
- Slabs for Pantry Sinks—Wood *vs.* Marble.
- Test for Well Pollution.
- Corrosion of Lead Lining.
- Size of Flush Tank to Deal with Sewage of a Small Hospital
- Details of the Construction of a House-Tank.
- The Construction of a Cistern under a House.
- To Protect Lead Lining of a Tank, and Cause of Sweating.
- Stains on Marble.
- Lightning Strikes Soil-Pipes.
- How to Fit Sheet Lead in a Large Tank.
- Why Water is "Milky" When First Drawn.
- Carving-Tables.
- Is Galvanized Pipe Dangerous for Soft Spring Water?
- How to Arrange Hush Pipes in Cisterns to Prevent Syphoning Water Through Ball Cock.
- Depth of Foundations to Prevent Dampness of Site.
- Self-Acting Water Closets.
- Wind Disturbing Seal of Trap.
- How to Draw Water from a Deep Well.
- Cause of Smell of Well Water.
- Absorption of Light by Gas Globes.
- Fitting Basins to Marble Slabs.
- Intermediate Tanks for the Water Supply of High Buildings.
- How to Construct a Filtering Cistern.
- Objections to Running Ventilating Pipe into Chimney-Flue.
- Size of Water Supply Pipe for Dwelling House.
- Faulty Plan of a Cesspool.
- Disposing of Refrigerator Wastes.
- Pumping Air from Water Closet into Tea Kettle as Result of Direct Supply to Water Closets.
- Danger in Connecting Tank Overflows with Soil-Pipes.
- Arrangement of Safe Wastes.
- What is Reasonable Plumbers' Profit?

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233 Pages; 109 Illustrations; Size, 6 x 9 inches. Cloth bound. Price, $1.50.

This book contains a compilation of questions, answers and descriptions relating to Steam Heating and Steam Fitting, expertly treated and adapted to the wants of those who design, construct and have charge of steam-heating apparatus. The work embodies results of some of the best experience and practice in the trade, presenting solutions of many difficult problems connected with the steam-fitter's work. We reproduce some of the subject-matter headings of Steam Heating Problems, which are of interest as indicating the practical character of the problems and questions which are treated.

BOILERS.

- On blowing off and filling boilers.
- Where a test-gauge should be applied to a boiler.
- Domes on boilers; whether they are necessary or not.
- Expansion of water in boilers.
- Cast *vs.* wrought iron for nozzles and magazines of house-heating boilers.
- Pipe-connections to boilers.
- Passing boiler-pipes through walls; how to prevent breakage by settlement.
- Heating-boilers. (A problem.)
- Isolating-valve for steam-main of boilers.
- On the effect of oil in boilers.
- Proportions for rivets for boiler-plates.
- Iron rivets and steel boiler-plates.
- Is there any danger in using water continuously in boilers?
- A supposed case of charring wood by steam-pipes.
- Domestic boilers warmed by steam.

VALUE OF HEATING-SURFACES.

- Computing the amount of radiator-surface for warming buildings by hot water.
- Calculating the radiating-surface for heating buildings—the saving of double-glazed windows.
- Amount of heating-surface required in hot-water apparatus boilers and in steam-apparatus boilers.
- Calculating the amount of radiating-surface for a given room.
- How much heating-surface will a steam-pipe of given size supply?
- Coils *vs.* radiators and size of boiler to heat a given building.
- Calculating the amount of heating-surface.
- Computing the cost of steam for warming.

RADIATORS AND HEATERS.

- Improper position of radiator-valves.
- Hot-water radiator for private houses.
- Remedying air-binding of box-coils.
- How to use a stove as a hot water heater.
- "Plane" *vs.* "Plain" as a term as applied to outside surface of radiators.
- Relative value of pipe on cast-iron heating surface.
- Relative value of pipe on steam-coils.
- Warming churches (plan of placing a coil in each pew).
- Warming churches.

PIPE AND FITTING.

- Steam-heating work—good and indifferent.
- Piping adjacent buildings: pumps *vs.* steam-traps.
- True diameters and weights of standard pipes.
- Expansion of pipes of various metals.
- Expansion of steam-pipes.
- Advantages claimed for overhead piping.
- Position of valves on steam-riser connection.
- Cause of noise in steam-pipes.
- One-pipe system of steam-heating.
- Air-binding in return steam-pipes.
- How to heat several adjacent buildings with a single apparatus.
- Air-binding in return steam-pipes, and methods to overcome it.

VENTILATION.

- Size of registers to heat certain rooms.
- Determining the size of hot-air flues.
- Window ventilation.
- Removing vapor from dye-house.
- Calculating sizes of flues and registers.
- On methods of removing air from between ceiling and roof of a church.

STEAM.

- Economy of using exhaust steam for heating.
- Heat of steam for different conditions.
- Superheating steam by the use of coils.
- Effect of using a small pipe for exhaust steam-heating.
- Explosion of a steam-table.

CUTTING NIPPLES AND BENDING PIPES.

RAISING WATER AUTOMATICALLY.

MOISTURE ON WALLS, ETC.

MISCELLANEOUS.

- Heating water in large tanks.
- Heating water for large institutions and high city buildings.
- Questions relating to water-tanks.
- On heating several buildings from one source.
- Coal-tar coating for water-pipe.
- Filters for feeding house boilers. Other means of clarifying water.
- Testing gas-pipes for leaks, and making pipe-joints.
- Differential rams for testing fittings and valves.
- Percentage of ashes in coal.
- Automatic pump-governor.
- Cast-iron safe for steam-radiators.
- Preventing fall of spray from steam-exhaust pipes.
- Heating and ventilation of a prison.
- Amount of heat due to condensation of water.
- Expansion-joints.
- Resetting of house-heating boilers—a possible saving of fuel.
- How to find the water-line of boilers and position of try-cocks.

MISCELLANEOUS QUESTIONS.

- Applying traps to gravity steam-apparatus.
- Connecting steam and return risers at their tops.
- Power used in running hydraulic elevators.
- On melting snow in the streets by steam.
- Arrangement of steam-coils for heating oil-stills.
- Converting a steam-apparatus into a hot-water apparatus and back again.
- Condensation per foot of steam-main when laid under ground.

These books will be sent postpaid on receipt of price, $1.50 per copy.

DAVID WILLIAMS COMPANY, Publishers, 232-238 William Street, New York.

Injunction Restraining the Use of the Name "Peck Brothers" by the Chicago Company.

As the trade has been caused some inconvenience by the use of the name "Peck Brothers" by the original company in Connecticut and a company in Chicago, the following decree, entered pursuant to the direction of the Circuit Court of Appeals for the Seventh Circuit, is published, that the real facts relating to the right to the name may be understood. Those who care for further information are referred to the opinion of the Circuit Court of Appeals in 113 Federal Reporter, 296.

THE PECK BROTHERS & COMPANY, New Haven. Conn.

UNITED STATES CIRCUIT COURT
FOR THE NORTHERN DISTRICT OF ILLINOIS.

THE PECK BROTHERS & CO.
of New Haven, Conn.,
vs.
PECK BROS. CO., *et al.*,
of Chicago.

Decree.
Gen. No. 25,574.

This cause came on to be further heard at this term of the Court upon the pleadings, evidence, depositions, exhibits and proofs and the former orders and decrees herein, and also upon the Mandate of the United States Circuit Court of Appeals in this cause duly issued on the 24th day of April, 1902, and filed herein, whereby the former decree entered in this cause on the 8th day of July, 1901, was wholly reversed, set aside and annulled, and said cause was remanded to this Court with directions to enter a decree according to the prayer of the bill of the said complainants. And the said cause having been argued by counsel, and thereupon, upon consideration thereof:

It is Ordered, Adjudged and Decreed, That the said complainant has the sole, absolute, paramount and exclusive right to use the name of "Peck Brothers & Co.," or "Peck Bros. Co.," or "Peck Bros.," or the name of "Peck" in connection with the business which it is carrying on and conducting in the manufacture, purchase and sale of plumbing, gas and steam fitting machinery, material and supplies, and brass and iron goods as against the said defendants; and that neither the said defendant corporation, "Peck Bros. Co.," nor the defendants, Oliver D. Peck, James H. Johnson, William A. Ratcliffe and Albert D. Sanders, as its directors and managers, have any right or authority to use the name of "Peck Brothers & Co.," or "Peck Bros. Co.," or "Peck Bros.," or the name of "Peck" or any words substantially identical therewith, in connection with the business which said defendants have carried on and conducted under the said name and style of "Peck Bros. Co." since the 24th day of August, 1896, in the manufacture, purchase and sale of plumbing, gas, steam fitting machinery, material and supplies and brass and iron goods. And the Court further finds that the said defendant, "Peck Bros. Co.," and the said defendants, Oliver D. Peck, James H. Johnson, William A. Ratcliffe and Albert D. Sanders, as its directors and managers, have heretofore and are now wrongfully and fraudulently using the said name of "Peck Bros. Co." in carrying on and conducting the said business of the manufacture, purchase and sale of plumbing, gas and steam fitting material, supplies, fixtures and brass and iron goods in Chicago and elsewhere. It is further ordered and decreed by the Court that the said defendant corporation, "Peck Bros. Co.," and the said defendants, Oliver D. Peck, James H. Johnson, William A. Ratcliffe and Albert D. Sanders, as its officers and directors, be and they are hereby each of them perpetually enjoined and restrained from using said name of "Peck Brothers & Co.," or "Peck Bros. Co.," or "Peck Brothers" or "Peck," or names substantially identical therewith, in connection with the business of the manufacture, purchase and sale of plumbing, gas and steam fitting material, supplies, fixtures, brass and iron goods in any manner whatever, or from stamping or marking said names or any of them, or any name substantially identical therewith, upon any goods or articles manufactured by them; or from selling or offering for sale by themselves or their agents any goods manufactured by them having stamped thereon any of the names aforesaid; or from using said names or any of them in connection with the said business of said defendant corporation, "Peck Bros. Co.;" or advertising the business of said defendant, "Peck Bros. Co.," under the said names or any of them, and also from holding out or representing that the goods manufactured by thc defendant corporation of "Peck Bros. Co." and its said directors and managers, Oliver D. Peck, James H. Johnson, William A. Ratcliffe and Albert D. Sanders, are the same goods as those manufactured by the complainant, and from using or interfering in any manner whatever with the prior and paramount right of the complainant to use the name of "Peck Brothers & Company" or "Peck Bros. Co." or "Peck Bros." or "Peck" in connection with the business of the manufacture, purchase and sale of plumbing, gas and steam fitting material, supplies and brass and iron goods.

It is, however, further ordered by the Court that nothing in this decree shall be construed or held as enjoining or preventing the defendant Oliver D. Peck from using his own name as an individual in and about the conduct of his business.

And it further appearing to the Court that the said defendant corporation, "Peck Bros. Co.," and the said defendants, Oliver D. Peck, James H. Johnson, William A. Ratcliffe and Albert D. Sanders, as its directors and officers, have carried on business under the name of "Peck Bros. Co." since the filing of the bill herein fraudulently and without authority:

It is further ordered by the Court that this cause be referred to William M. Booth, one of the Masters in Chancery of this Court, to take an account of the gains and profits, if any, which have been made and received by the defendant corporation, "Peck Bros. Co.," and the said defendants, Oliver D. Peck, James H. Johnson, William A. Ratcliffe and Albert D. Sanders, as its directors and managers, from the time of filing the bill in this case down to the date of the entry of this decree. The said Master in Chancery is hereby directed to receive and consider the evidence, depositions, exhibits and proofs hereinbefore offered in this case and to take further evidence in this behalf. And it is further decreed by the Court that the said defendant corporation, "Peck Bros. Co.," and the defendants, Oliver D. Peck, James H. Johnson, William A. Ratcliffe and Albert D. Sanders, its directors and officers, do appear before said Master in Chancery when and where they may be required, and that they be ordered to produce before the said Master the books of said corporation or such of them as may be reasonably required from time to time by said Master for the purpose of showing said gains of the said defendant, "Peck Bros. Co.," by reason of using its said name in connection with its business; that said books be opened for inspection at all reasonable times to the counsel of the said complainant or such persons as he may employ to examine the same with the view of ascertaining said gains and profits, and that the said defendants, Oliver D. Peck, James H. Johnson, William A. Ratcliffe and Albert D. Sanders, and each of them, are hereby ordered to submit to examination under oath before said Master with regard to the gains and profits which said defendant corporation has made and received by reason of the use of said name.

And it is Further Ordered, That the said parties to this cause have leave to apply to the Court from time to time during said accounting for further orders and instructions in that behalf, and that the said Master make his report of said gains and profits with all convenient speed.

And it is Further Ordered, That the said complainant recover from the defendant its costs in this behalf, for which execution may issue.

Kohlsaat, J.

Entered June 4, 1902.

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A HEATING APPARATUS with from nine to seventeen vertical corrugated cast iron flues, or Sections, forming the Fire Cylinder and Combustion Chamber, and having 65 square feet of heating surface to each square foot of grate surface.

Warms thoroughly and to the proper temperature great volumes of air, by passing it through the flues, and conveys it to every part of the building.

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NEW YORK AND CHICAGO.

New York, June 28, 1902.

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The Master Plumbers' Convention.

The large attendance at the annual convention of the National Association of Master Plumbers, held at Atlantic City last week, was an agreeable surprise to all concerned. The indications presented earlier in the month that the convention would be a record breaker in point of numbers were completely fulfilled. The number of delegates reached the handsome total of five hundred and forty-four, which was eighty-nine more than the highest record of the past. The California contingent, it may be noted, did not appear surprised, but expressed the belief that when the convention meets next year on the Pacific Coast even this record will be surpassed. Probably it was not interest in the work of the National Association alone, but also the desire of many from the interior of the country to see the sights on the Atlantic Coast that brought so large a number of delegates from the West. It is confidently expected that now the convention has voted to meet next year in California many plumbers will begin making preparations at this early date to avail themselves of the especially low rates made by the railroad companies in order to enjoy a view of the attractions of the Pacific Coast. Notwithstanding the large number in attendance, the business part of the convention was satisfactorily completed. There is no room for doubt that a strong feeling exists on the part of the plumbers that too much is not demanded in the Cleveland Resolutions. While appreciating the sacrifice of time and labor that must be made by President Hornbrook, his reelection with that of the rest of the national officers and the appointment of the same Executive Committee, with one exception, was undoubtedly made for the purpose of giving to the Cleveland Resolutions the vigorous support to which the delegates and the local associations feel they are entitled. That President Hornbrook was reluctant, notwithstanding the honor of a re-election, to continue to carry the burdens that go with the office of the national executive was very evident, and it was only when the unanimous feeling that his re-election was necessary was made clear that he finally allowed his name to be used. The association is to be congratulated on having transacted the business of this national convention in a satisfactory manner, and in the re-election of officers who so highly merit the confidence reposed in them.

To Promote Export Trade.

The announcement of the incorporation of the Export Club of America, a new business and social organization which has just taken possession of quarters in the Tontine Building, Wall and Water streets, New York City, is an illustration of the intelligent and enterprising spirit in which our merchants and manufacturers are reaching out for foreign trade. It is another indication that this country is thoroughly in earnest in seeking to extend its commercial relations with the world at large. From a statement made in regard to the lines on which the club proposes to prosecute the work of promoting the sale abroad of American products, it is evident that the diffusion of information holds an important place. The club will aim to give foreign houses who desire American goods advices as to the parties from whom they may be advantageously obtained, calling their attention, primarily at least, to such manufacturers as are members of the club, a feature of which is calculated to attract manufacturers to the organization. The rooms of the club have been furnished with all modern conveniences, including files for catalogues and price-lists and other interesting matter pertaining to American manufactures. Among the charter members are found manufacturers, merchants and sales agents, as well as lawyers, engineers and financiers. One direct effect of the effort will apparently be to bring the foreign houses and the American makers of goods into close relationship, a matter which on general principles is very desirable. This feature of the plan, however, will possibly be regarded with disfavor by some of the commission houses, who are reluctant to have their customers brought into direct contact with the manufacturers in this country. But many of the more progressive and successful commission houses take a broader view of the question and are disposed to welcome any influence which diffuses information in regard to facilities here for the supply of foreign markets. The need of the dissemination of such information in Spanish-American countries is especially urgent, and as this is a field to which the Export Club is primarily and principally turning its attention, whatever aid they may give in bringing the products of our manufacturers to the notice of buyers in those countries will be regarded as a substantial contribution to the good work of occupying the world's markets. The club, however, is something of an experiment, and its operation and development will be watched with interest.

Saturday Early Closing.

The custom of early closing on Saturdays in the summer, the observance of which has been growing steadily among business concerns in the past few years, seems now to have become an almost general rule. Practically all the large wholesale and retail establishments in New York City are now closing at noon, or 1 p.m. on Saturdays, and at 5 o'clock on the other days of the week during the summer months. Moreover, the term during which the early closing is observed has in many cases become extended. Whereas, formerly, this was done only in the months of July and August, which are regarded as the heated term in the United States, many concerns now close on Saturday afternoons from the first of June to the end of September. The wide adoption of this laudable practice is an indication that employers in general appreciate the fact that they lose nothing by giving to their employees during the trying summer months an opportunity of refreshment and rest, which enables them to perform their duties during the balance of the week with increased strength and energy. Where such a practice has become general the dread of losing business to competitors who do not close is removed; and this is about the only ground upon which any business need be kept open on Saturday afternoons in the summer. One or two large New York retail concerns are this year trying the experiment of closing down for the whole day during the months of July and August, thus enabling their employees to go to the country or the seaside on Friday night and secure two entire days of recreation and fresh air. The human machine is so constituted that such periods of rest during the heat of summer are absolutely essential to keeping it in proper shape for doing good work. As in the workshop, it is a short sighted policy that will drive a machine to death. A further advance along this line of Saturday vacations is seen in the increasing number of business houses that are beginning to close early on that day all the year round. This is especially noticeable in the downtown business district of New York City, where such notices as "This store (or office) will close at three P. M. on Saturdays," and so forth, are now quite common.

Plan for Government Arbitration.

Instigated thereto by the present strike in the coal mining industry, Representative McDermott of New Jersey has prepared, for presentation to Congress, a bill to authorize the appointment of boards of investigation and arbitration, for the purpose of adjusting labor disputes. The bill authorizes the President, when informed by petition or otherwise of the existence of a strike, to appoint a board of investigation and arbitration, to be composed of seven members, of whom one shall be selected by the employers and one by the employees. The commission is empowered to investigate and obtain a comprehensive account of the matters in dispute, and it is provided that the opinion of each member of the board upon the justice of the demand of each party to the dispute, shall be made to the President. Upon submission of any matter in dispute, as authorized by the bill, the board will consider the testimony offered by the parties and give judgment upon all matters submitted. Every such board will terminate its life upon the filing of its report upon the matter referred to it. Under the Constitution the Federal Government has no power to cause arbitration of purely local labor disputes in the different States; but Mr. McDermott believes that the Constitution is broad enough in the delegation of authority to Congress and the Executive to permit of investigation and to provide a court of arbitration in any matter that affects commerce between the States, such as the present coal strike, which seriously affects business interests in all parts of the country.

Sheet Metal Workers Busy.

The active demand prevailing for sheet metal, whether bright or terne plates, black or galvanized sheet iron, affords evidence that the sheet metal workers throughout the country are well occupied. Notwithstanding that most of the tinware now used is factory made, the tinsmith still has occasion to work up a considerable amount of bright plate to meet the requirements of his various customers, and the tin roofer, while called upon to compete with many kinds of roofing material, still finds that where slate or tiles are used on buildings, no small amount of tin plate for valleys and gutters is in demand by the builders. It is also worthy of note that the higher grade heavily coated roofing plates are in especially good demand. The increased use of black and galvanized corrugated sheet iron for both the side walls and roofs of warehouses and factory buildings has kept well occupied those who make a specialty of erecting such work. In cities where massive ornamental cornices are used as a finish on large buildings the sheet iron cornice has almost entirely superseded cornices of wood, stone or other material, and the demand in this branch of trade is constantly increasing. A further evidence of the gratifying condition of activity prevailing in the sheet metal working industry is the fact that the demand for skilled workmen in this branch of trade is in excess of the supply. Probably no line of business in which our readers are interested presents so satisfactory a condition all around as the sheet metal working industry at the present time.

STATISTICS OF IRON AND STEEL PRODUCTION IN 1901.

James M. Swank, general manager of the American Iron and Steel Association, Philadelphia, has just issued his annual statistical report, giving the complete statistics of iron and steel production in the United States and Canada in 1901, also statistics of the world's iron and steel production in 1899 and 1900. The report just issued shows an improvement on its predecessors, in giving greater details relative to some products, notably pig iron, which is separated into the various grades.

Twenty States made pig iron in 1901, against 21 in 1899 and 1900. The total production of pig iron in 1901 was 15,878,354 gross tons, against 13,789,242 tons in 1900, 13,620,703 tons in 1899, 11,773,934 tons in 1898 and 9,652,680 tons in 1897. The production in 1901 was 2,089,112 tons more than in 1900. Of the 1901 production 9,589,936 tons was Bessemer and low phosphorus pig iron, 1,448,850 tons was basic pig iron, 3,186,348 tons foundry pig iron and 639,184 tons forge pig iron, the balance being made up of malleable Bessemer, charcoal, white and mottled, spiegeleisen and ferromanganese grades. Pennsylvania, as usual, produced the largest output of pig iron, being credited with a total of 7,342,257 tons, Ohio coming next with 3,325,425 tons, Illinois third with 1,596,850 tons and Alabama fourth with 1,225,212 tons.

The total production of Bessemer steel in 1901 is given at 8,713,302 tons, as compared with 6,684,770 tons in 1900, an increase of about 25 per cent.

The total production of open hearth steel in the United States in 1901 was 4,656,309 gross tons, against 3,398,135 tons in 1900, an increase of over 37 per cent. The production of open hearth steel has more than doubled in the last four years.

The production of all kinds of steel ingots and castings in the United States in 1901 reached a total of 13,473,595 tons, as against a total of 10,188,329 tons in 1900.

The total production of all kinds of steel rails in 1901 was 2,874,639 gross tons, as compared with 2,385,682 tons in 1900.

The production of iron and steel wire rods in the United States in 1901 amounted to 1,365,934 gross tons, against 846,291 tons in 1900, showing an increase of over 61 per cent. Of the total only 375 tons were iron rods, the rest being steel.

The total production of all kinds of iron and steel rolled into finished forms in the United States in 1901 is placed at 12,349,327 gross tons, as against 9,487,443 tons in 1900. This total includes iron and steel rails, bars, hoops, skelp and shapes, wire rods, plates and sheets and cut nails.

A killing frost in the Platte Valley of Nebraska this week reflects the possibilities of midsummer weather in this great Republic.

Stove Costs Advancing.

The conditions prevailing in the iron trade are of a character to impart greater stiffness to the price of stoves. Pig iron has again advanced all along the line during the past week. Taking No. 2 Southern foundry pig iron, at Cincinnati, as a basis of comparison, it is to be noted that the price of this standard grade, so largely used by stove founders, is now $21.25 per ton, as compared with $13 at the corresponding time last year. This is an advance of fully 55 per cent. Other iron centers throughout the country show about the same relative change in price. This, however, applies only to pig iron available for delivery some months hence, say in the last quarter of the year. Foundrymen who for any reason are compelled to purchase iron for prompt shipment may have to pay a premium of from $1 to $2 or even more for what they can pick up and be thankful that they can get it. Pig iron has not been so scarce for many years as this summer. Furnacemen usually carry some stocks at their furnaces from which they can supply urgent necessities of their customers. But for months the demand has been so heavy, in spite of the large production of iron, that stocks at furnaces have completely disappeared. It may be alleged that this does not affect many stove manufacturers, as they are in the habit of placing orders far in advance of their requirements so as to be sure to have iron when they need it. But these orders are not being filled to their satisfaction, as the furnace companies have sold their maximum output, and whenever an accident interferes with the regular operations of their furnaces they have no iron to ship. This happens so frequently that consumers are kept in hot water by slow deliveries on their contracts. The strike in the anthracite coal regions has caused a number of Eastern furnaces to bank or blow out, and their customers are obliged to look elsewhere for a supply of iron to meet their immediate wants. For the first time in many years pig iron is being imported in considerable quantities to help out the domestic supply. But this does not aid the foundryman in the matter of cost, as the imported iron is being sold at high prices. Coal, coke, bolts and other essentials in the production of stoves are likewise much higher than at the corresponding time last year.

The advance in the price of stoves thus far made this year, amounting in the most extreme instances to 10 per cent., covers only a small part of the increased cost. It will be remembered that on April 1 an advance of 5 per cent. was made in molders' wages, and advances have also been made on other classes of labor. Thus the advance in stove prices has little more than covered the higher rates paid to workmen in stove factories. Under the circumstances it is not surprising that the advisability of another substantial advance in stove prices is being agitated among the manufacturers. Indications are strong that high prices for iron will prevail throughout this year and the opening months of next year. Stoves sold on the basis of costs prevailing in the early part of this year will have to be replaced by others costing much more, and a prudent manufacturer cannot help seeing that such a policy means a serious loss to him. Prospects favor a very heavy stove trade this fall, and those who are agitating for higher prices desire action to be taken in time to secure practical benefit from the fall trade. Otherwise, the bigger the trade the worse will it be for manufacturers.

THE MINNESOTA STOVE COMPANY, Shakopee, Minn., are sending out a four-page folder, calling attention to their Steel Coral and Crown Coral Steel Ranges, which they manufacture in the usual modifications. The bodies and ovens are exceptionally strong, being constructed of extra heavy cold rolled steel, closely riveted and braced so that they cannot warp from the heat, nor are they likely to bend in transportation. The wearing parts are lined with heavy asbestos, which is again protected with either cast or sheet metal plates. The fire box is oval in shape, heavily lined and well ventilated, and is fitted with a duplex grate which can be removed through the drop door in the front. The feed door is of the combination type for coal or wood. The back flue has a cast iron base, and the water front is of large capacity and tested to 300 pounds pressure. The ovens are ventilated, and the oven doors are provided with friction springs which prevent dropping. The reservoirs are enameled on cast iron, and are provided with extra galvanized iron lining between the reservoir and the outside sheet.

Why Are Not Stoves Higher?

We have received the following communication from a manufacturer who does not hesitate to write as he thinks, and who asks questions which he would undoubtedly like to have his fellow manufacturers answer:

There is no industry akin to the stove trade, the selling price of whose product in proportion to its cost is not from 25 to 50 per cent. higher than the selling price of stoves. That is, a man in some other industry who would put the same cost that is put into a stove would get from 25 to 50 per cent. more for the article. And why is it? Is it because so few manufacturers have enough backbone to get a fair compensation for their cost and labor? Or is it because the large stove manufacturer is compelled to sell his goods at the same price as the little founder who runs a small local shop, has not half the capital and does only a local business? In other trades such little manufacturers are not recognized as the ones who guide and make the prices. In other kindred industries manufacturers do not seem to go about with a searchlight hunting an excuse to lower prices. On the contrary they seem to use this light to try to find the means of giving to their business some plan, shape and form by which, while they serve the public well, they also serve themselves, too, and get as much for their goods as such high cost goods should bring.

The present cost of stoves, compared with the present cost of many other staple iron products, would warrant stoves bringing from 10 to 20 per cent. higher prices than they do. But is it fear, jealousy, or what is it that keeps them down? They should bring more money, and they would if the stove business generally was as intelligently managed as many other lines which have not one-half the capital invested. The stove buyer would not object to paying the manufacturer a higher price if he could only rest assured that he was as well and fairly treated as any of his neighbor retailers buying from other equally large manufacturers. The retailer does not consider every little corner store his competitor, and thereby he saves his own profits. He knows who his competitor is, and whether he is one of his own standing and equal caliber. It is there that the retailer can show the more aristocratic manufacturer a thing or two in getting a fair compensation for the cost he puts into his goods. The retailer knows who is his competitor and does not recognize every idiot as such.

Coal, iron, coke, putty, bolts, nickel solutions, labor and all else going in to the make up of a stove are very much higher. Some items are up 50 per cent. Therefore stoves should be higher. But they have not reached the level of the advances on the materials which go into the goods. The manufacturer seems to be blind to the fact that he must recognize that every other thing he buys, outside of what he uses to make his goods, has advanced—meat, lumber, clothes, rent, insurance, and so on all along the line. His living, as well as his manufacturing expenses, have advanced, so why on earth do not stoves advance more than they do?

The retail dealers are getting the benefit and what fun there is in it. The public do not get so much out of it, for the retailer gets all that his goods will stand and figures them always at the advance he would pay for his next goods. Retailers will not be slow to load up the manufacturer with all the orders he will book for goods for this season, and even for next, at present low prices, wherever they can find the manufacturer willing to book such orders. And why should he do it; and why is he doing it? Because he knows that stoves ought to be higher. C. B. E.

THE FURNACEMAN'S CREED REVISION.

BY W. R. M.

The gospel of fresh air—that is, the securing of the exhaust from every room—is being proclaimed by heating and ventilating engineers, by National and State authority and by an army of graduates from the technological institutes who are destined to revolutionize the usual methods of installation. This is *ipse dixit*, and should be accepted without dissent, because the furnace is elevated to a higher degree of usefulness, its scope of operation expanded and a pleasant sequence of increased profits is in perspective.

The natural function of the furnace is distribution of air, while with steam and hot water systems, air distribution by a system of air inlets and air outlets is supplementary with extra cost. It is therefore clear that the natural distributer, the furnace, now having air inlets, may add air outlets to its function at small cost. Whatever else in the heating trade may drop out of line when the "electrical millennium" arrives, the furnace is bound to remain, notwithstanding that Professor Dolbear, in his book "Matter, Ether and Motion," says: "But if ever electricity is obtained directly from combustion in an economical way, as there is some reason for thinking possible, electric heaters will displace stoves and the common furnace in the house."

Now, we do not take issue with the professor as to the common furnace; but, self preservation being the first law of nature, we cannot exist without our wind. We change our furnace to meet the new conditions, and when electricity from combustion is achieved, as it soon will be, its logical situation will primarily be in the combustion chamber of a heat source and, so far as the furnace is concerned, the combustion chamber will continue to be the source of energy.

The furnace is bound to remain; but it is equally bound to be changed to meet new conditions. And there is no other system so susceptible to important improvement as the furnace system, for by it air circuits are easily operated and from it will come the "wireless system of electrical heating and ventilation" for the twentieth century.

Death of William B. Betts.

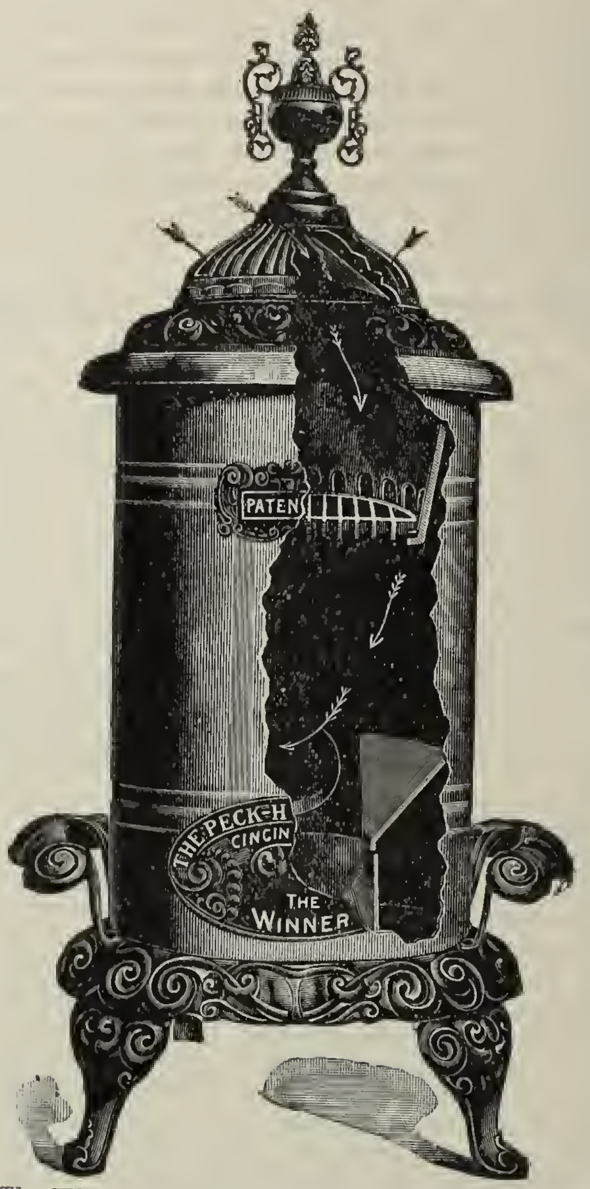
In our last issue brief announcement was made of the sudden death of William B. Betts, for many years manager of the Stove Manufacturers' Repair Association in Water street, New York City. For some time Mr. Betts had not been in very good health, and although this was generally known by a wide circle of friends in the trade, his death came as a decided shock. There is, however, consolation in the fact that he passed away very peacefully, his death occurring at the residence of his son in Summit, N. J., on Thursday, June 19, in the sixty-fourth year of his age. At the time of his death he was seated in a chair reading a newspaper preparatory to going for a drive.

"Billy" Betts, as he was popularly known in the local stove trade, previous to his management of the Manufacturers' Repair Association was at various times connected with the houses of Eugene Munsell & Co., the Barstow Stove Company, Ely & Ramsay and the Union Stove Works, and for a time was in business for himself. He was universally esteemed for his sterling qualities, and enjoyed the friendship of a wide circle of business acquaintances. He was a native of Danbury, Conn., a veteran of the Civil War, a past master of the George C. Strong Post, G. A. R., and a member of the Brooklyn Masonic Veterans. The funeral was held from his late home in Brooklyn on Saturday, June 21. He leaves a widow and one son.

UNDER date of June 20 Southard, Robertson & Co. Water street and Peck slip, New York City, issued an announcement withdrawing all previous and current quotations, owing to the increased cost of production in the manufacture of Stoves and Ranges. An advance of 5 per cent. was made on that date, and it was stated that all quotations are subject to further change without notice.

The Winner Down Draft Oak Stove.

We present herewith a broken view of what is known as the Winner patented down draft oak stove, which is being manufactured by the Peck-Hammond Company of Cincinnati, Ohio. The construction is such as to permit of the burning of any kind of fuel, and the claim is made that the stove readily holds fire over night. The fire pot is at the top of the stove and the smoke pipe at the base, so that the heat is drawn toward the floor. It has a large ash drawer, which does away with dust and dirt in removing ashes, and the company regard it as a most economical stove, as it utilizes more of the fuel than is ordinarily the case. The stove is meeting with a very gratifying reception at the hands of the trade, and the company regard the sales since its introduction as more than realizing expectations.



The Winner Down Draft Oak Stove.—Broken View.

The Improved Quick Meal Range of 1902.

In bringing out the new range for this season the Ringen Stove Company, division of the American Stove Company, St. Louis, take pride in calling attention to a number of details of improvement and attractiveness in the Quick Meal range. The new high closets are now made entirely of steel and the brackets and frame construction of the closets are of tube construction the same as the entire corner construction of the range. This, it is said, makes the range light and strong and adds greatly to its general handsome appearance. The front edge of the top of the range is nickel plated, and a new towel bar, which swings out of the way when not in use, is added. The Quick Meal range is made in all shapes and with either right or left hand reservoir and with or without pouch feed, high closet or high shelves. Two distinct lines of finish can be supplied, one polished steel and the other of black enamel, and it is claimed that either of these will stand at the head in point of excellence.

Windsor Ranges and Standard Furnaces.

Bartlett, Hayward & Co., Scott and McHenry streets, Baltimore, Md., have just issued a 1902 supplement to their stove catalogue, illustrating and describing the new patterns which they have added to the line of Windsor ranges and Standard furnaces. The new ranges are made in portable form as well as for brick setting and with five or six boiler holes in the top surface, according to requirements. They are furnished with fire box at the right or left of the oven, with vertical or horizontal boilers, with or without upper and lower hot closets, together with other features of obvious convenience and utility. The New Windsor is made in several styles and sizes, and has an exterior of attractive design. In connection with the various illustrations, dimensions, prices and brief descriptive particulars are presented.

The Standard furnace, which the company have added to their line, has a 60-inch casing, and is furnished with or without cast base. In the construction of the radiator the aim has been to secure the greatest amount obtainable of heating surface, and the company feel that they have accomplished this result in the addition of the center drum to the four-sheet radiator. The products of combustion pass from the fire chamber to the inner radiator through four ports in the crab. The outlet from the inner to the outer radiator being at the front the products of combustion are necessarily drawn to the front, by which method they are brought into contact with every inch of metal in the four-sheet radiator and center drum before passing to the smoke flue. The four ports in the crab leading into the bottom of the radiator give an equalized draft, by which a uniform distribution of heat from the radiator is obtained, and compelling the furnace to heat at the front as well as at the back. The fire pot, on account of its weight and size, is made in two parts. The grate is of the rocking pattern, the mechanism being simple and durable.

The March-Brownback Stove Company.

The new stove catalogue, substantially bound in board covers, which has just been issued by the March-Brownback Stove Company, Pottstown, Pa., is a volume likely to interest a large class of dealers. It is made up of 126 pages of letter press, profusely illustrated with well executed engravings, showing an extensive and more than ordinarily attractive assortment of ranges and heaters. The volume is known as Catalogue No. 54. The company request the recipient not to mutilate the book, and say that if a circular of any particular stove is desired they will gladly furnish it upon application. Their assortment of ranges they regard as so complete that they have not deemed it necessary or advisable to get out any new patterns this season. The goods represent the results of knowledge derived from 54 years' experience in range construction, and are regarded as first-class in all respects.

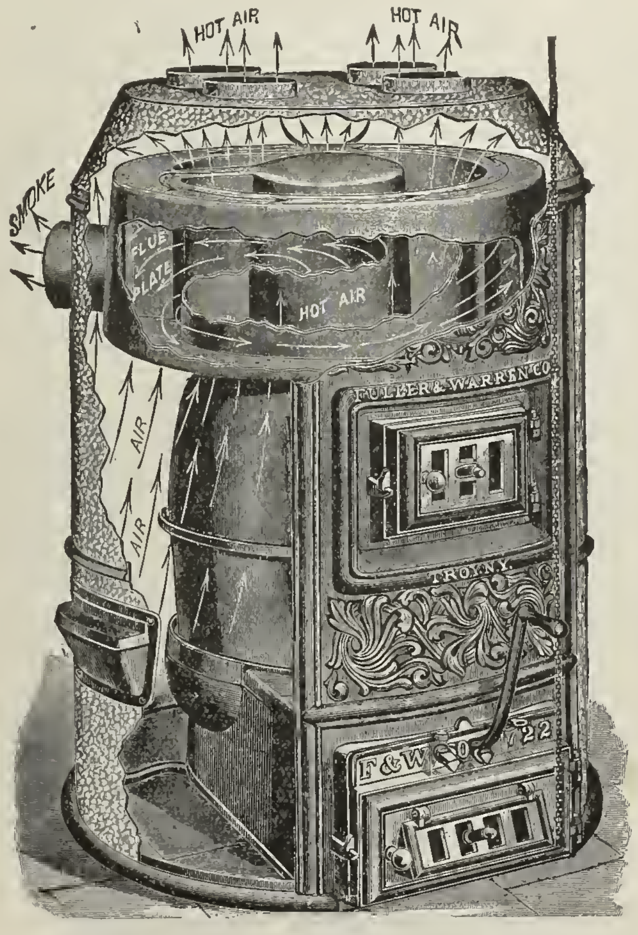
The ranges are offered for the most part under the generic name Globe, with such prefixes as Electric, New Victor, Rival Victor, New Welcome, Expert Welcome, New Prize and Prize, for burning coal or wood. All these are fitted with duplex grate, and are offered in a number of styles and sizes. The external treatment is rich and effective, cast ornamentation constituting a conspicuous feature. Other goods include the Prize, Expert, Congress, Herald, World, Clara Barton, Climax and Tropic ranges.

Several pages are devoted to warming closets and pipe shelves, after which heating stoves are considered. The leading place is given to the Bright Crown, made with full return flue or direct draft, and intended for using hard or soft coal as a fuel. The front and sides have ample mica illumination, and nickel plays a prominent part in the external decoration. A varied assortment of heaters of cheaper construction are illustrated, including air tights, sheet iron surface burners, globe and cannon stoves. In the way of oak heaters, the catalogue presents an interesting assortment, including a number of new patterns for this season, the line this year being larger in variety and styles than heretofore.

The Crown Oak is an attractive heater of its class, while the Prize Oak is another entirely new pattern, having an artistic cast iron front. The Royal is referred to as an original oak construction, with concealed fire pot and other features likely to commend it to the trade. In the line of furnaces, of which several are shown in the catalogue, special attention is directed by the manufacturers to the Crown warm air heater of the low down type, which renders it especially adapted for use in low cellars. It is made in several sizes, and in the catalogue the internal construction is indicated by means of engravings, which show the heater with the casing removed. An interesting feature of the closing pages is a chapter on "How to Best Determine Sizes of Warm Air Supply Pipes Used in Connection with a Ventilating Apparatus." Tables of capacities of pipes and registers are also given, together with some suggestions to be observed when installing the Crown warm air furnace.

The F. & W. Co. Hot Air Furnace No. 722.

We present herewith a broken view of a member of the No. 700 series of hot air furnaces being introduced to the trade by the Fuller & Warren Company of Troy, N. Y. A special feature in connection with the construction of this series of furnaces is that the radiator is of cast iron, made in one piece, thus preventing any possibility of leakage of gas, while insuring great durability. The construction of the radiator is such that by the insertion or removal of a "flue plate" it can be adapted to the use of hard or soft coal. The feed section or dome is of one heavy piece of cast iron sufficiently large to allow the gases to burn freely. It is joined to the radiator and fire pot by deep cup joints packed with kaolin, thus making gas tight connections. The fire pot is heavy and made in one or two parts, as desired. The walls are nearly perpendicular, which, it is claimed, not only increases the draft but allows a larger grate surface, thus permitting an additional body of live coals. This construction also tends to prevent an accumulation of ashes on the fire pot sides, thus insuring clean walls, while facilitating combustion of the fuel resting against the edges of the pot and materially increasing radiation at the point where the maximum heat is generated.



The F. & W. Company Hot Air Furnace No. 722.

The grate employed is of the triangular four-piece variety, the bars being operated in pairs by a shank that extends outside of the furnace. Any of the bars can be removed and replaced without disturbing other portions of the grate. The ash pit is unusually large, and will hold a great quantity of ashes, thereby lessening the possibility of burning out the grate in case of inattention.

This same style of furnace can also be supplied by the company provided with steel horseshoe radiator. In this case the steel walls are deeply imbedded in the cup joint of the top and bottom plates. The joints are filled with asbestos cement backing, thus insuring perfectly gas tight connections. A pamphlet which the company have issued and copies of which can be had by the trade on application illustrates and describes at length the heaters to which reference is here made.

Schill Steel Ranges and Cooks.

We have received from the Schill Brothers Company, Crestline, Ohio, advance sheets of their catalogue showing new steel ranges and cooks for 1902. The sheets are oblong in shape, are bound together at the top by means of silken cord and are inclosed in red paper covers, the front of which carries an embossed design in black and old gold. The text reads the narrow way of the sheets, so that in turning the pages it is done from the bottom instead of the side, as is the usual method. The Schill steel range is intended for using hard coal, soft coal, coke and wood, and is offered in several sizes. Its constructive features include spring balance door, pouch feed for coal, cast reservoir casing, the front of which is covered with sheet steel, while the bottom of the reservoir casing has a drip cup to take up and absorb all drippings from the reservoir and prevent them from running into the body of the range. The bottom of the smoke flue is cast iron. All sizes and styles can be furnished with swing feed door, if desired. The ranges are so constructed that a hot water circulating boiler can be attached if necessary.

The Schill steel cook is of neat exterior, has square ventilated oven, balance oven door which drops down, thus forming a convenient shelf; extra large ash pan, large hearth plate supported by brackets, screw draft in ash door and drop draft door in front, which can be opened to light the fire; duplex grate, interchangeable cover plates and other features likely to interest the trade. In the reservoir style provision is made to take up and absorb the drippings, as mentioned in connection with the steel range.

The Schill B and C ranges for 1902, to which attention is also invited, are made in 8 and 9 inch covers, four and six holes in the top surface, 20 and 22 inch ovens and in all styles and sizes. Reference is made to the Schill oak stove for wood and coal, which is made in four sizes. It is also made with hot blast.

The Standard Oven Thermometer.

The Helios-Upton Company, Peabody, Mass., who are the first to bring out an oven thermometer, have met with such success in the introduction of this useful and convenient device that they have sold 150,000 of them. Their thermometer can be adjusted to any oven and has no complicated parts. They have sold so many of them and to such a large number of the leading stove manufacturers that they confidently claim to have the best oven thermometer now in the market. It is sold in quantities as low if not lower than any other thermometer. An immense number have been sold for this year's business. The manner in which they handle the trade is to take a stove manufacturer's order for his season's supply and ship him a certain number each month.

Among those attending the recent convention of the Southern Hardware Jobbers' Association at Atlantic City, N. J., were Frank Ouerbacker of the O. K. Stove Company, Louisville, Ky.; John E. Gaitley and S. H. Jacobs of the Troy Nickel Works, Albany, N. Y.; E. R. Johnson of the Comstock-Castle Stove Company, Quincy, Ill., and L. D. Vogel of the Charter Oak Stove & Range Company, St. Louis, Mo.

ODD PLATES.

The Syracuse Stove Works, Syracuse, N. Y., have issued a price-list in the shape of a 16-page pamphlet, illustrating and describing the Welcome Furnace, which is fitted with the Kernan patented shell bar rotating and revolving grate. Other constructive features include heavy sectional corrugated fire pot; horizontal and vertically corrugated feed section; all cast or steel plate radiator with full revertible flue; improved boxed front; large dust flue and damper, and steel casing rings for double casings. A number of interesting data are presented within the pages of the price-list, special attention being given to dimensions and heating capacities of the various sizes manufactured.

The Steiger & Kerr Stove & Foundry Company, San Francisco, Cal., have just awarded the contract for a foundry building, a machine shop, a carpenter's shop and a warehouse to be erected at the corner of Folsom and Eighteenth streets.

A little pamphlet, issued by the Rochester Radiator Company, Rochester, N. Y., tells all about the Rochester Radiator, which they are offering in several styles and sizes. Particular emphasis is laid upon the economy of this device and the merits which are claimed for it. Accompanying the pamphlet are leaflets giving some of the many testimonial letters which the company have received regarding the Radiator in question.

At a recent meeting of the directors of the Duffy-Trowbridge Stove Mfg. Company of Hannibal, Mo., officers for the ensuing year were elected as follows: President, James Duffy; vice-president, C. H. Trowbridge, and secretary and treasurer, W. F. Chamberlain.

The Odin Gas Range is the subject of a neat little pamphlet of a size convenient to carry in the pocket, which is being sent out by the Odin Stove Mfg. Company, Erie, Pa. The constructive features to be found in the Range are set forth at considerable length and illustrations are given showing the general appearance of the Range with oven and also with broiler and oven. A sectional view gives an idea of the appearance of the Range when dismantled. Attention is called to the Tri-Odin Sectional Burners, intended for using natural gas, and in connection with which prices are to be found.

H. P. Gingrich, the Illinois representative of the American Stove Company, Ringen Stove Company division, has been absent since May on an extended trip abroad, devoting much of his time to travel in Germany. It is expected that he will return in July, and will then be pleased to visit his many friends in the interests of the Quick Meal line.

The Cleveland Steel Range Company, Cleveland, Ohio, utilize a neat four-page folder for the purpose of calling the attention of the trade to their Gem Ideal Gas Range, which is made with double oven and water heater. The body is of cold rolled steel, the linings of asbestos, the ovens are ventilated and the burners are of the direct flame type. All grates are flush, and for burning natural gas the Range is furnished with closed top. The exterior is neat and attractive, nickel being judiciously employed. The catalogue which the company have issued gives full particulars regarding the merits of their leading lines.

C. Emrich of 371 South High street, Columbus, Ohio, is sending out a 20-page pamphlet as a supplement to his general catalogue No. 8. It illustrates a number of patterns of Cooks and Ranges which have been added to the maker's already extensive line. The Ranges are offered under the names Crown Florence for coal or wood and the Noble Florence for wood only. They have four boiler holes in the top surface, nested griddle cover, oval fire box, large square ovens, direct flues and other features calculated to command the attention of the trade. The goods are made in several styles and sizes, and are of attractive exterior. The new Cooks include the Crown and Earl Florence for coal or wood and the Noble Florence for wood only. The features embodied are of the modern type, and the makers feel confident the goods will prove very popular with the trade.

Work has been begun on the new plant of the Quaker Mfg. Company, Chicago Heights, Ill., formerly known as the Wireton Heating Company of Blue Island. The company are manufacturers of Hot Air Furnaces and Combination Hot Air and Hot Water Heaters. The plant will comprise an engine and boiler house, pattern shop, together with a foundry, 70 x 150 feet, one-story high; erecting shop and shipping building, 50 x 200 feet, two stories high, and a warehouse, 50 x 150 feet, one-story high.

E. H. Stockstrom, sales manager of the American Stove Company, St. Louis, is absent on an extended pleasure trip abroad, and from last reports he is enjoying the attractions of travel in Germany.

The Hopson-Haftenkamp Company, Grand Rapids, Mich., have issued a catalogue and price-list of 120 pages covering their large line of Airtight Stoves and Furnaces, Tinners, and Roofers' Supplies.

The latest edition of *The Stove Repairer*, issued by H. E. Hessler Company of Syracuse, N. Y., contains a vast amount of matter likely to prove of interest to the Stove dealer who also carries in stock more or less of a line of Hardware and Tin Shop Supplies. In the introductory pages the point is made that *The Stove Repairer* has many advantages over other salesmen in that "it travels cheaper, has no hotel bills, no incidental expenses, asks no large salary, and as a consequence is able to quote better prices on first-class goods than any competitive salesman." The main lines represented by the publication are Stove Repairs, Furnace Repairs, Water Fronts, Fire Clays, Asbestos Cements, Putties and a general line of Tin Shop Supplies in combination with a large line of Hardware and House Furnishing Goods.

Rohrbacher & Allen, 166 South Howard street. Akron, Ohio, are now making the Jahant Hot Blast Furnace with air box and elbows of cast iron instead of galvanized iron as heretofore. These changes the manufacturers state are meeting with great success. An interesting pamphlet which the makers have issued illustrates and describes the Jahant Furnace at considerable length, and gives in connection therewith a long list of testimonials from some of those who have practically demonstrated the merits of the heater.

The Danville Stove & Mfg. Company, Danville, Pa., are just putting on the market an all cast Gas Range in three sizes—16, 18 and 20 inches. It is designed principally for use in the natural gas territory of Pennsylvania. The company have remodeled their cheap Heater, the Ideal Beaver, bringing it out in a new dress, with a more modern and artistic appearance than formerly. They are also making radical changes in their Beaver Oak, placing all five sizes on a handsome base. They are now making double as well as single Heaters.

Death of Edward N. Currier.

On Thursday, June 19, Edward N. Currier was run down by an electric car in Cleveland, Ohio. He died on the following day, and was buried from his home, 145 Sibley street, the funeral being largely attended by his Masonic brethren and the Elks, with a special committee from the Furnace Dealers' Association. Mr. Currier was the founder of the City Stove Repair Company, 104 Prospect street, Cleveland, and was held in high esteem by his business associates and friends. The business will be continued by his wife under the management of Frank W. Satchell, who has been the assistant manager for the past 15 years. The funeral services were conducted by Dean Williams of Trinity Cathedral, and the Cathedral Quartette rendered appropriate musical selections. The pallbearers were from the Masonic lodge to which he belonged, and the interment was made at Lake View Cemetery.

The Cincinnati fall festival, "for the honor and glory of Cincinnati," will be held September 15-27. The gathering will be conducted under the auspices of the Fall Association of Cincinnati.

Cords Bros. are successors to Edward F. Cords in the retail Hardware, Stove and Sporting Goods business in Elkader, Iowa.

ARKANSAS RETAIL HARDWARE DEALERS' ASSOCIATION.

The third annual meeting of the Arkansas Retail Hardware Dealers' Association was held in Little Rock on June 18 and 19, with 46 members present. The meeting was called to order by President John M. Pittman on Wednesday morning and the delegates were welcomed by Mayor Duley of Little Rock in an eloquent address. Vice-President Maxey responded to the address of welcome.

The president appointed the following committees:

Auditing: J. F. Maxey, R. P. Graham, K. G. McRea.
Resolutions: H. H. Morgan, R. F. Roys, E. E. Mitchell.
Question Box: W. M. Harrell, Hamp Williams, Frank Gregg.

The annual address was delivered by President Pittman, who expressed the desire that more of the retail hardwaremen of the State should join the association, in order that it might be enabled to accomplish more substantial results. He recommended the election of a salaried secretary, who would be able to give enough time to the association, and that the secretary issue an annual manual and papers, with such other information as would help to build up the retail hardware trade of the State. He also recommended that the date of the annual meeting be changed from the third Wednesday in June to the second Wednesday in May.

Secretary-Treasurer John A. Plummer of Marianna submitted his report, showing a membership of 52 and a cash balance of $60.50. J. B. Gregg of Little Rock read an interesting paper entitled "What Effect Will a Combine of Large Hardware Companies Have on the Retailers?" The convention then adjourned until Thursday morning.

The session on Thursday morning was initiated by Hamp Williams, who read a paper on "The Most Important Things in Conducting a Hardware Business." A discussion of the subject of "Freights and Railroad Commissions" followed. W. M. Graham of Clarendon read an interesting paper on "Fakes and Fakirs; or, Leg Pullers," in which he referred to this as one of the greatest evils of business. The paper was followed by a lively discussion of the subject.

The Question Box then being opened, discussion was held on the subjects "How Goods Should be Marked" and "Is This a Good Time to Buy Wire Nails?"

At the Thursday afternoon session the Nominating Committee made the following report, which was adopted and the parties named duly elected:

President, Jno. M. Pittman, Prescott.
First Vice-President, J. F. Maxey, Ozark.
Second Vice-President, T. B. Stewart, Newport.
Secretary and Treasurer, C. E. Taylor, Little Rock.

President Pittman appointed the following committees:

Executive Committee: E. E. Mitchell, Morrilton; W. M. Graham, Clarendon; Hamp Williams, Hot Springs; J. H. Bolcourt, Little Rock; R. F. Roys, Russellville.
Membership Committee: D. E. Watson, Hamburg; C. T. Rosenthal, Batesville; W. A. Jackson, Dardanelle; K. G. McRea, Hope; D. H. Miller, Van Buren.
Grievance Committee: J. A. Plummer, Marianna; W. M. Harrell, Conway; W. M. Graham, Clarendon.
Committee on Fraternal Relations: L. P. Rudolph, Arkadelphia; J. B. Avera; F. L. Curfman, De Queen.
Transportation Committee: Frank Stearns, Hot Springs; J. H. Bolcourt, Little Rock; Frank Gregg, Little Rock.
Programme Committee: E. E. Mitchell, Morrilton; W. L. Babcock, Hot Springs; R. P. Graham, Fordyce.

Mr. Pittman, the president, was presented with a pair of gold glasses by the association, and Mr. Plummer, the secretary and treasurer, with a gold headed cane. The meeting then adjourned *sine die*.

On Wednesday evening the local members of the association, assisted by the jobbers, entertained the visiting delegates in a charming and delightful manner through the medium of a moonlight excursion on the Arkansas. A 25-mile sail was had and the occasion was most heartily enjoyed by a party numbering about 200.

George H. Cole and Lester F. Cole have just formed a partnership under the name of George H. Cole & Son, for the purpose of conducting a retail Stove store at 229 River street, Troy, N. Y. The business was previously conducted by George H. Cole.

The Annual Meeting of the Vulcan Club.

The third annual meeting of the Vulcan Club (Cleveland Furnace Dealers' Association) of Cleveland, Ohio, was held on the evening of June 19. The treasurer's report showed a considerable gain in financial strength during the third fiscal year of the organization, the club now having a comfortable surplus, approaching four figures, in hand. The retiring president, George W. Bennett, delivered his annual address, and the secretary's report, reviewing the work of the past year, showed that the club had good cause to congratulate itself upon the result of its activities.

The election of officers to serve during the ensuing fiscal year resulted as follows:

President, C. R. Holmes of the Holmes Furnace & Stove Company.

Vice-President, M. C. Bosworth of the Burrows-Bosworth Hardware Company.

Treasurer, W. H. Dettlebach of the Dettlebach Plumbing & Heating Company.

Secretary, E. F. Bohm.

Sergeant-at-Arms, W. C. Oates of Bogue & Oates.

Directors: C. R. Holmes, M. C. Bosworth, E. F. Bohm, W. H. Dettlebach, W. G. Smith and G. G. Brown.

Messrs. Dettlebach and Bohm were chosen to serve as treasurer and secretary, respectively, for the fourth time.

Lalance & Grosjean Mfg. Company.

Lalance & Grosjean Mfg. Company, 19 Cliff street, New York, have thoroughly renovated their offices and sample rooms at this address. New ornamental metal ceilings and wainscoting have been put in throughout and tinted, together with hard wood floors, entirely new furniture, such as desks, chairs, &c., and a number of other such conveniences. On the wall in the main office are two large framed pictures, one of which represents the great plant at Woodhaven, L. I., where is manufactured nickel-steel ware and the various other classes of goods such as japanned and tin ware, galvanized goods and numerous special articles for the trade which are made to order. The other picture represents their large rolling mills at Harrisburg, Pa., where is manufactured from the billet different kinds of sheet iron and tin plate used at Woodhaven. In marked contrast with these two immense plants as they exist to-day is a small colored print of the Woodhaven shops representing them as they appeared in 1863, at that time called the "spoon factory."

On the top of the main building at Woodhaven they have recently installed an electrical sign 340 feet long, with letters 8 feet high, showing the words Nickel-Steel Ware, which is probably the largest sign of the character in existence.

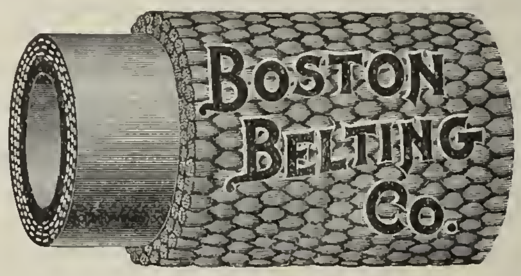
In the New York office they have a souvenir of the Spanish War in the form of an ordinary nickel-steel agate ware cup, which was one of a large number presented to Troop C, New York Volunteer Cavalry, who in May, 1898, were entertained by A. J. Cordier, the vice-president of the company, at Woodhaven Junction, while *en route* from Camp Black to Camp Alger, and afterward Porto Rico. Each member of the troop, after being entertained at Mr. Grosjean's mansion nearby, was presented with one of these cups, this particular one having been returned with the evidence of service on it by Charles Curie, Jr., of the law firm of Curie, Smith & Maxwell of this city, who was a member of the troop.

The Y-R Fly Killers.

The Wire Goods Company, Worcester, Mass., are putting on the market the Y-R fly killers, which are made in two styles, with twisted wire handle and black enameled wooden handle. There is a kink in the outside wires, and the binding cord across the face of the brush is tied into the kink and thus kept securely in place. It is explained that the brush wires are fastened to the handle by an improved method, the handle and brush being joined so as to be practically one piece. The killers are packed ready for delivery to the customer, each killer being wrapped and protected by a paper cover, thus making a saving to the merchant, besides keeping the killer in good condition for sale. Among the points of excellence mentioned by the manufacturers are the following: That the handle will not break where the brush is joined, that the handle and brush will not come apart and that the brush will keep in shape.

The Universal Cotton Jacket.

The Boston Belting Company, Boston, Mass., are now prepared to weave over various kinds of rubber hose the cotton jacket shown herewith. This is a heavy, seamless fabric, to increase the strength of hose and to add to its capacity for withstanding the wear and tear of being dragged about where the wear is hard, as when used by contractors and in mines. The jacket is painted to render it waterproof. The manufacturers state that it never kinks, does not get bent or out of shape and that it does not unwind should a single strand be cut. The jacket is applied to air, gas, water, steam, air and steam drill hose.



The Universal Cotton Jacket.

Stove and Hardware Dealers.

Peters & Hardin, dealers in Hardware, Stoves and Sporting Goods, Gretna, Neb., have disposed of their business to Sanborn Bros.

The New Jersey Aluminum Company, Newark, N. J., issues catalogues of novelties for advertising and souvenir purposes. They are accompanied by a price-list.

G. B. Cadwell & Son have purchased the Hardware, Stove and Tinware business of Van McCurdy, at Atlantic, Iowa.

M. L. Brady has removed his Hardware, Stove and Harness stock from Sulphur Springs, Ark., to Lenapah, Ind. Ter.

Plummer & Wheeler, Hardware dealers, Petersburg, Va., have been succeeded by the John F. Plummer Company, who will continue the wholesale and retail business in Hardware, Stoves, Agricultural Implements, Sporting Goods, Wooden Ware, Carriage Material, &c.

Keneipp & Grimwood, in the Hardware, Stove, Harness and Lumber business, Owensville, Ind., have been succeeded by Grimwood & Co.

W. J. Bush has disposed of his interest in the Hardware, Stove, Roofing and Plumbing business of Bush & Martin, at New Bethlehem, Pa., to Chas. H. Heath, formerly of Oak Ridge. The new firm style will be Heath & Martin.

New York Hardware Company, Chandler, O. T., have been incorporated with a capital of $10,000. Their line comprises Shelf and Heavy Hardware, Stoves and Tinware, Sporting Goods, Plumbing Goods, &c.

George E. Gomley has succeeded Geo. E. Fairbanks & Co. in the Hardware, Stove, Agricultural Implement, Sporting Goods and Heating and Plumbing business, at Abington, Mass.

The Schunk-Marquardt Company, Toledo, Ohio, wholesale and retail Shelf Hardware, Stoves, Tinware, Sporting Goods, Paints, Oils, &c., have been incorporated with a capital stock of $100,000.

The capital stock of the Simmons Hardware Company, Beaumont, Texas, wholesalers and retailers of Hardware, Stoves, Tinware, &c., has been increased from $10,000 to $20,000.

THE OFFICERS OF THE NATIONAL ASSOCIATION OF MASTER PLUMBERS.

Especial interest will be taken in the portraits of President E. D. Hornbrook and Vice-President Charles Polacheck of the National Association of Master Plumbers, which we take pleasure in presenting herewith, from the fact that for the second time only in the history of this important trade association it has re-elected its officers.

President E. D. Hornbrook, who is at the head of a successful plumbing and heating business in Kansas City, Mo., attracted the attention of his fellow members in the National Association through the clearness and force of his arguments on all occasions before the association when he sat in its conventions as a delegate. When Mr. Tierney was elected president Mr. Hornbrook was chosen vice-president of the association. During Mr. Tierney's illness he found it necessary to perform many of the offices of the president, and he was thoroughly acquainted with all the trade agreements that had existed for a number of years back, when, at the close of President Tierney's administration, the association elected Mr. Hornbrook to succeed him in the presidential office.

His administration has been a strong one and he has accomplished much for the trade through the force of his personality and the influence which he wields. During President Hornbrook's administration the Cleveland Resolutions, which have secured the practically unanimous support of the plumbing trade, were substituted for the New York Conference Resolutions. Mr. Hornbrook was very reluctant to again take up the burdens of the president's office, and it was only after it was made clear to him that it was the unanimous feeling of the delegates that he was best calculated to secure the observance of these resolutions, that he allowed his name to again be presented to the convention. He was unanimously elected.

Vice-President Charles Polacheck has also been a man of strong influence in the councils of the National Association of Master Plumbers, which has seen fit to confer upon him for the second time the second highest honor in the gift of the association. Mr. Polacheck is at the head of a successful plumbing business and is also interested in the manufacture of gas fixtures in Milwaukee, Wis. He has represented his State as delegate in the national convention for a number of years and has also served as a member of the Wisconsin State Legislature, so that he brings to the National Association a wide experience and a ripe judgment. It was he who proposed the name of Mr. Hornbrook for re-election, expressing the belief that Mr. Hornbrook's influence and personality were at this time essential to the association and saying that to act as his assistant was a sufficient honor. Mr. Polacheck is second only to Mr. Hornbrook in the esteem of the members of the National Association of Master Plumbers, and is held to be almost equal to him in the influence which he can bring to bear upon all questions of importance.

President E. D. Hornbrook.

Vice-President Charles Polacheck.

THE OFFICERS OF THE NATIONAL ASSOCIATION OF MASTER PLUMBERS.

* * *

The Chicago House Wrecking Company, the company that are tearing down the buildings of the Pan-American Exposition, state that within 60 days the Exposition will live only in memory; that by that time all the buildings will have been obliterated. So far the Government, the Agricultural, the Manufactures and the Horticultural buildings are practically demolished, and men are working on the Machinery Building and the Electric Tower. The Goddess of Light is to come down from the tower within a week, as the purchasers are anxious to get her to grace a popcorn stand in Cleveland, Ohio.

The United States Government authorities will, it is announced, shortly invite tenders for the construction of sewers and water works for the city of Manila, Philippine Islands. The estimated cost of the undertaking will be about $4,000,000.

The Census Bureau have issued a report on the manufacture of needles and pins in the United States, which shows a capital of $3,235,158 invested in the manufacture of these articles by 43 separate establishments. The annual value of the product of needles and pins is placed at $2.738.439.

The Tin Plate Industry.

Census Report for the Year 1900.

The Census Bureau has completed an elaborate report upon the manufacture of tin and terne plates in the United States in the census year 1900, prepared by William G. Gray of Philadelphia, expert special agent for iron and steel. The returns show a capital of $6,790,047 invested in the tin and terne dipping industry by the 57 active establishments reported for the United States, but this sum represents only the value of land, buildings, machinery, tools and implements and the live capital utilized, and does not include the capital stock of any of the manufacturing corporations engaged in this industry. A majority of the establishments which manufactured tin or terne plates, or both, during the census year, also operated rolling mills, these mills being equipped for the production of the black plates which were coated with tin or with tin and lead in the tin dipping departments. At some plants, however, tinning pots had not been installed, and black plates or sheets were chiefly produced. Practically all the black plates made by establishments of the latter character were consumed by the tin dipping or stamping works of the country. There were 44 establishments engaged in the production of black plates during 1900, employing a capital of $20,698,255. Combining the two branches of the industry the total capital employed was $27,488,302; the total wages, $10,288,061; the cost of materials, $45,004,716, and the value of products, $61,912,619.

While it might appear that because 57 establishments were reported in the tin and terne dipping industry and 44 in the manufacture of black plate, there were, therefore, 101 establishments in the combined industries, this was not the case, since establishments which performed both operations—namely, the manufacture of black plates and the dipping of these plates—would thus be counted twice. As a matter of fact, there were 35 active dipping establishments which were equipped also for the manufacture of black plates, and in addition there were 22 active plants equipped for tin and terne dipping only, and nine plants equipped for the manufacture of black plates only, or a total of 66 active plants. The items given as the cost of materials in the combined industry include a duplication of $20,590,566, being the value of black plates reported by that branch of the industry and used as material in the tin and terne dipping mills. Similarly, in order to obtain a true total value of products it is necessary to deduct from the total value of products shown for the combined industries the value of the black plates produced by the black plate establishments and used as material in the tin and terne dipping establishments. In this manner it is found that the total value of the products of the combined industries was approximately $41,322,053. In this total, however, there are included products other than black plates or tin and terne plates, valued at $9,660,669.

In these calculations it is assumed that the domestic black plates consumed by the tin and terne plate plants were all produced during the census year. Of course this is not the fact, as a considerable part of the black plates consumed by tin and terne plate plants in the early part of the census year was drawn from stock made in the previous year, while a large part of the black plates produced by domestic mills toward the close of the census year was still in stock, not having been forwarded to the tin and terne plate plants. The figures for cost of materials and value of products for the combined industries are not, therefore, altogether exact. They are, however, approximately correct and give a fair idea of the importance of the combined industries during the census year.

Tin and Terne Plates.

The materials employed in the tin and terne dipping industry during 1900 were as follows: Domestic black plates, 825,566,992 pounds, valued at $20,590,566; foreign black plates, 2,358,607 pounds, valued at $78,288; pig tin, 20,282,778 pounds, valued at $4,528,173; pig lead, 6,871,480 pounds, valued at $398,617; palm oil, 5,511,645 pounds, valued at $282,227; sulphuric acid, tinning flux, bran and pink meal, $187,318; boxes and nails, $303,316; all other materials, $269,351; total, $26,728,150. From these figures it appears that aside from black plates, which amount to 77.3 per cent. of the total cost of the materials used, pig tin and pig lead were the most important items. It is also seen that the use of foreign black plates, which was confined to the States of Pennsylvania and Virginia, was very small compared with the use of domestic black plates and sheets. Bituminous coal and slack and natural gas were the most important fuels used in the order named. Nineteen establishments employed natural gas for fuel in whole or in part. The total output for the census year was returned at 707,718,239 pounds of tin plates, valued at $25,553,021, and 141,285,783 pounds of terne plates, valued at $5,731,124. The total production of the industry was increased by small quantities of other articles valued at $607,866.

A number of the dipping plants run on single turn only, each turn being, on an average, ten hours. At other plants, however, especially those which produce their own black plates, double and triple turn is the practice, two and three sets of skilled workmen being employed. Based upon double turn the capacity of the completed works for tin plates alone, including the two idle plants, was 4,037,076 pounds daily, or allowing 300 working days for each year, 1,211,122,800 pounds annually, and for terne plates, 1,482,726 pounds daily, or 444,817,800 pounds annually. The total yearly capacity for the two products on double turn is thus found to be 1,655,940,600 pounds. These capacities are, of course, largely theoretical, as it would be almost a physical impossibility to operate all the tinning sets in the country at the same time and on double turn.

In summarizing the statistics of the industry by States it appears that the bureau has followed the rule that in cases where less than three plants were located within a State, or where all the plants in the State were operated by an individual company, the statistics should be included with those for another State. There were 25 establishments in Pennsylvania engaged in the tin and terne dipping industry, with an aggregate capital of $3,042,029. The average number of wage earners employed was 1578. The products included 256,879,332 pounds of tin plates, 77,129,648 pounds of terne plates and 200,473 pounds of other sheet iron or sheet steel, tinned or terne plated. Pennsylvania apparently enjoys the distinction of being the only State from which tin and terne plates were exported by the manufacturers during the census year. The quantity reported was 17,939 pounds, valued at $897.

Since the establishments in operation in Indiana were all under the management of a single company, the statistics of capital invested, the cost of materials used and the value of products have been included with similar data for the State of Illinois. All the five Indiana establishments produced both tin and terne plates. In reaching a total for the establishments in the State, each of the five plants operated by the single company above referred to has been counted as one establishment. The average number of wage earners employed during the year was 572. Indiana was the only State which used natural gas exclusively for fuel in the manufacture of tin and terne plates during the census year, not one of the five establishments reporting the consumption of a single ton of coal. During the census year there were three establishments in Illinois engaged in the tin dipping industry. Terne plates were not made. The average number of wage earners employed during the year was 166. The capital invested in the eight tin and terne plate plants in Indiana and Illinois was $1,117,184. The products included 231,992,162 pounds of tin and terne plates and 800,000 pounds of other sheet iron or sheet steel, tinned or terne plated.

There were 12 completed tin and terne dipping establishments in Ohio at the close of the census year, with a total capital of $1,203,265. The average number of wage earners employed during the year was 697. The products included 132,163,383 pounds of tin plates and 30,146,921 pounds of terne plates.

As Maryland and West Virginia had each only two tin and terne dipping establishments in operation during the census year, it is necessary to combine the data for the two States to avoid disclosing the operations of individual establishments. The four establishments located in these two States reported a total capital of $586,182. The average number of wage earners employed was 274. The product was 67,721,725 pounds of tin and terne plates. The establishments in Maryland made tin plates only.

During the census year there were four tin and terne dipping establishments in operation in the State of New York, with an aggregate capital of $245,579. The average number of wage earners employed during the year was 55. The products included 5,591,050 pounds of tin plates and 3,900,000 pounds of terne plates.

In each of the States of Virginia, Kentucky, Michigan and Missouri only one tin or terne plate plant was in operation during the census year. The total capital reported was $1,050,067. The average number of wage earners employed during the year was 329. The products included 43,479,801 pounds of tin and terne plates—mostly in tin plates. The Michigan establishment consumed their entire product in their own works in the manufacture of various specialties. Virginia and Kentucky made terne plates only and Michigan and Missouri made tin plates only.

Black Plates.

The materials consumed in the black plate industry were valued at $18,276,566 and included iron ore, 1035 tons; pig iron, spiegeleisen and ferromanganese, 16,514 tons; scrap iron, 34,422 tons; iron or steel ingots, blooms. billets, tin plate bars, &c., 648,807 tons; fuel, $869,070; all other materials, $2,643,358.

More than nine-tenths of the black plates manufactured were made from Bessemer steel and less than one-tenth from open hearth steel. The average value of all kinds of black plates for tinning was $53.21 per ton. Changing gross tons to pounds, it appears that the total production of Bessemer and open hearth steel black plates in 1900 was 882,591,360 pounds, of which 795,372,480 pounds were Bessemer steel and 87,218,880 pounds were open hearth steel. These figures do not include the 79,096 tons of plates and sheets other than black produced by black plate mills during the census year.

Pennsylvania ranked first in the production of Bessemer steel black plates during the census year, producing almost one-half of the total quantity. Indiana was second, Ohio third and West Virginia fourth. These four States made over 96 per cent. of the total production of Bessemer steel black plates. Pennsylvania, Ohio and West Virginia also produced almost all of the 79,096 tons of other plates and sheets reported above, Ohio ranking first, Pennsylvania second and West Virginia third. In the production of open hearth steel black plates Missouri ranked first, Pennsylvania second, Illinois third and Ohio fourth. These four States produced over 96 per cent. of the total production of open hearth plates.

The returns show that there were 355 completed and building hot black plate mills located in the 44 active and three building establishments. Of these mills 332 were completed and 23 were building. The total annual capacity of all the hot mills, both completed and building, was 692,725 gross tons of finished black plates. The completed mills had a capacity of 641,450 tons and the building mills a capacity of 51,275 tons. The number of cold mills was 308, of which 294 were completed and 14 were building. The hot and cold mills in course of construction were located in Pennsylvania, Ohio and Michigan.

In point of equipment and capacity Pennsylvania was first with 170 hot mills (160 completed and ten building) and 162 cold mills (157 completed and five building). The hot mills had an annual capacity of 340,575 gross tons of finished black plates (completed mills, 314,325 tons, and building mills. 26.250 tons). Ohio was second with 68 hot mills (59 completed and nine building), having an annual capacity of 131,850 tons of black plates (completed mills, 114,525 tons. and building mills. 17.325 tons). and 63 cold mills (58 completed and five building). Indiana was third with 53 completed hot mills. having an annual capacity of 102.025 tons. and 38 cold mills. Illinois was fourth with 28 completed hot mills, with an annual capacity of 50,700 tons of black plates, and 12 cold mills. None of the other States named in the table had more than 14 hot mills or an annual capacity exceeding 28,000 tons of finished black plate.—*The Iron Age.*

THE TIN PLATE WAGE SCALE.

A conference will be held in New York on Monday, June 30, between officials of the American Tin Plate Company and the Amalgamated Association, for the purpose of arranging the tin plate scale for the year commencing July 1, 1902. The American Tin Plate Company will be represented in the conference by Warner Leeds, third vice-president, and by the district managers, consisting of J. R. Philipps, William Banfield, Cecil A. Robinson and Berthold Goldsmith. The base of the scale has already been fixed, and remains at $4.20 a box, and for each 10 cents advance per box in the price of tin plate there shall be 2 per cent. advance in wages. No agreement has been reached on the foot notes, and these will be considered at the coming conference. In addition to the 23 foot notes now in the tin plate scale, seven new ones have been proposed by the Amalgamated Association, commencing with No. 24, as follows:

24. That the screw boys do not bundle any scrap ends, scrap to be bundled by the company.

25. That all tin mills be paid at least every two weeks.

26. That we ask for Cleveland scale and the conditions governing mills granted at the Cleveland conference.

27. That when in the judgment of the manager and Mill Committee the work is too heavy for the catcher the company to furnish helper.

28. That when dirty bars are supplied for tin mills the company shall furnish a man to sweep them and the crew shall not be held responsible for dirty iron. The crew shall be paid for production per mill for such iron put in by the company.

29. That no more level hand jobs be given in tin mills, and level hand men be singled out as soon as vacancy occurs.

30. That ten (10) per cent. extra shall be paid for 40 gauge when doubled three (3) times.

Sheet Metal Interior Decorations.

The Kinnear & Gager Company, Columbus, Ohio, have issued their Catalogue No. 15, covering their products in the line of stamped steel ceilings, side walls, wainscoting, &c. The publication is 9 x 12 inches in size, of 52 pages, bound in a sage green cover and contains a large number of half-tone illustrations of the company's goods, together with views of interiors in which their ceilings and side walls have been used. The designs are handsome and many of them extremely elaborate and artistic in character, particularly those intended for use in large halls, churches, stores and offices. In addition to the ceilings, side walls and wainscoting, illustrations are given of center pieces, rosettes, borders, friezes, panels, beam covers, coves and cornice molds. The cuts, in many cases, are further supplied with profiles, which give a good idea of the decorative capacity and depth of the stampings. Full directions are also provided for erecting the company's steel ceilings, the panels of which are equipped with the Kinnear patent interlocking slip joint. Suggestions are also offered in regard to the selection of designs especially suited for various kinds of interiors.

The last page of the catalogue is devoted to the Kinnear & Gager paneled steel fire doors and shutters. These are provided with the company's new malleable iron automatic hinge, which is attached to the face of the wall by expansion bolts. These doors and shutters are covered with galvanized steel, which fully protects the wooden interior. The space between the panels is filled with asbestos fibre. The company advise us that their plant is running full in all departments, and that they are experiencing a large and steady demand for their products. A supplement to this catalogue, showing 25 new designs, will be issued shortly.

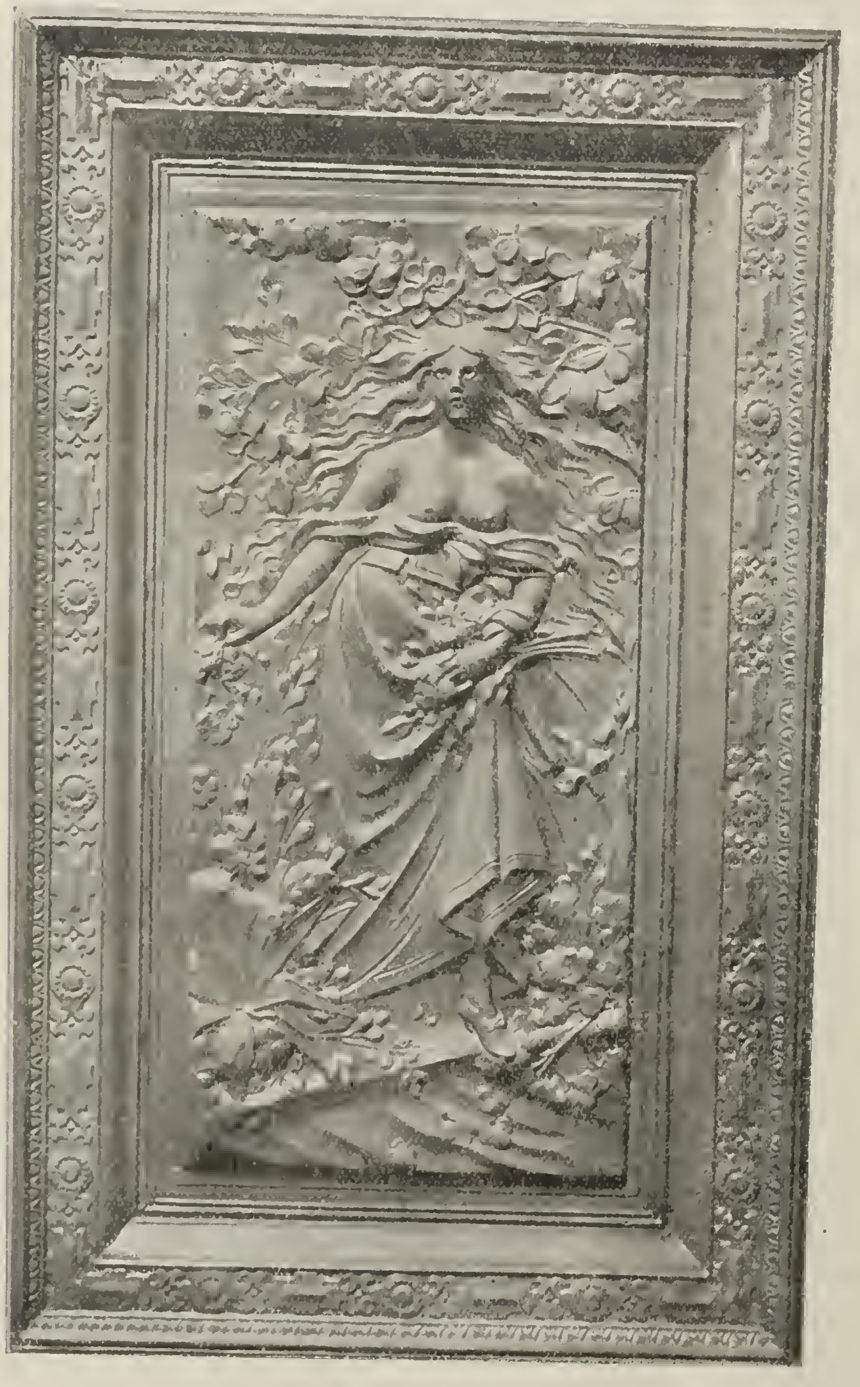
Death of T. New.

Tobias New, founder and head of the T. New Construction Company, manufacturers of roofing material at 537 West Fourteenth street, New York City, died on June 20, at his home, 50 Gates avenue, Brooklyn, after an illness of three weeks from a complication of diseases. Mr. New was of Dutch descent, and was born at Fulton, Schoharie County, N. Y. Early in life he engaged in the stove business at Bridgeport, Conn., and at Keene, N. H. In 1858 he removed to New York City, and became connected with Cyrus M. Warren in the roofing and paving business. Four years later he formed a partnership with H. G. Barnes under the firm name of Barnes & New. Mr. Barnes retired in 1869, and Mr. New continued the business until the time of his death, under the name of the T. New Construction Company. He was a member of the Lafayette Avenue Presbyterian Church of Brooklyn, of the Society of Mechanics and Tradesmen and of the American Institute. Mr. New leaves a widow and one son. The funeral services were held on Monday afternoon, and the interment was made in Greenwood Cemetery.

THE large Sheet mill plant of Zug & Co., Limited, Pittsburgh, Pa., has been working full time, with a large volume of orders. The plant will probably be shut down temporarily at the end of the month for stock taking and for the making of the necessary repairs.

Artistic Sheet Metal Stamped Work.

We have already made reference in these columns to the line of artistic sheet metal products manufactured by the New York Iron Roofing & Corrugating Company, Jersey City, N. J. Herewith we present two examples of the productions of the company in this line. In Fig. 1 is shown a handsome bas relief plate representing Ophelia, which is made in size 24 x 48 inches, without the decorative frame. These plates are made in zinc, copper or aluminum. Fig. 2 gives an example of one of the company's side wall plates in the Italian Renaissance style. These plates are 24 x 48 inches, and form a most attractive appearance when used for the walls of any building in connection with a ceiling of corresponding design.



Artistic Sheet Metal Stamped Work.—Fig. 1.—Panel of Ophelia.

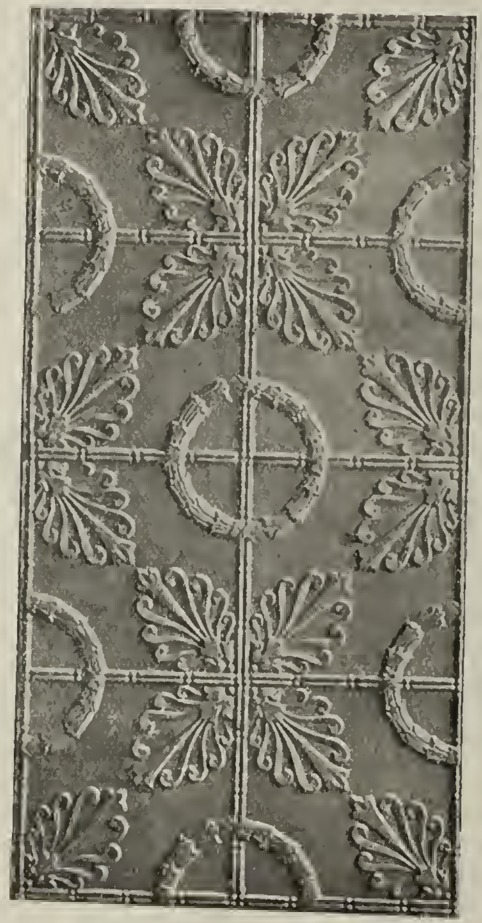


Fig. 2.—Italian Renaissance Side Wall Plate.

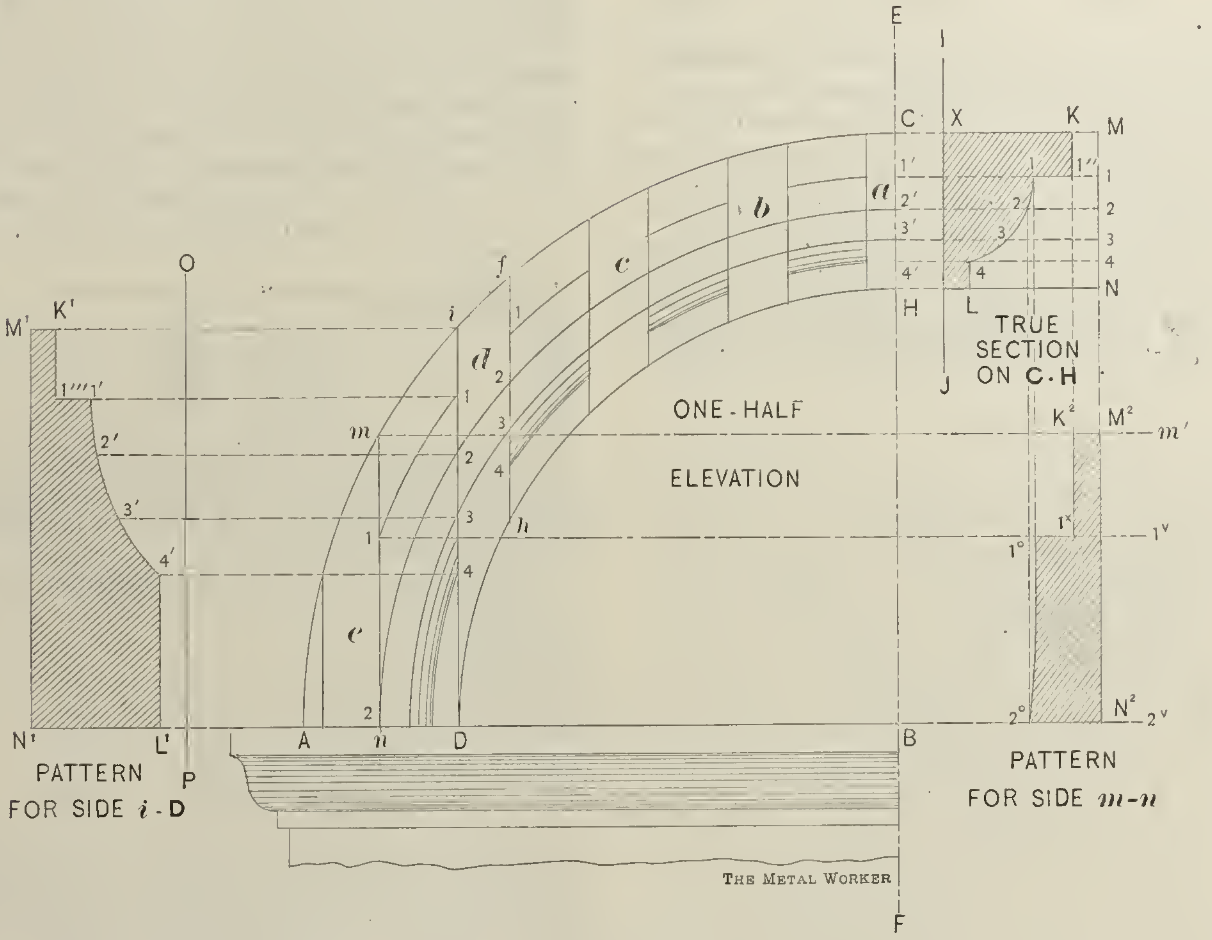
Tin House Workers' Wage Scale.

The tin house workers' wage scale for the year beginning July 16 next was arranged last week at a meeting in New York between the officials of the American Tin Plate Company and of the Tin Plate Workers' International Protective Association. The principal change in the scale was an advance of about 5 per cent. in the wages of workmen employed on the new Jenkins patent tinning machine, the use of which dispenses with the services of the riser. This machine has been successfully used in the American Tin Plate Company's plant at Elwood, Ind., and will probably be introduced in the other plants of the company, as they have purchased the patent rights. Some few minor changes were also made in the direction of equalizing the wage rates for the same class of work in all the mills. The officials of the Tin Plate Workers' Association are now engaged in conferences in regard to the scale with the various independent tin plate manufacturers.

PATTERNS FOR SQUARE DENTILS IN SEGMENTAL PEDIMENT.

PROBLEM: Where the sides of various square dentils intersect the molds of a segmental pediment on vertical planes, to find the patterns for the various dentil sides.

A correspondent desires to be informed through the columns of *The Metal Worker* how to obtain the patterns for the square dentil blocks fitting against the molds of a segmental pediment, as shown in the accompanying illustration, in which A B represents the horizontal molding on which the pediment is to rest. Through B, the center point, draw the line E F at right angles to A B. Then from B as center, using the desired radius, as B H, describe the arc H D. Now place the hight of the mold upon the center line E F, as shown from H to C, and using B as center and B C as radius describe the outer arc C A. Now parallel to E F draw the line I J, upon which, in its relative position to the points C and H on the line E F, draw the true section of the mold on C H, as shown by X K L. Then draw the side of the dentil M N L, which will represent a true section of the dentil also on the line C H. Now space and draw the dentils in their proper positions in the elevation, as shown by *a*, *b*, *c*, *d* and *e*.



Patterns for Square Dentils in Segmental Pediment.

Divide the section of the mold into an equal number of spaces, as shown by the small figures 1″, 1, 2, 3 and 4, through which points, at right angles to E F, draw lines intersecting the face of the dentil M N in section at 1, 2, 3 and 4, and the center line E F at 1′, 2′, 3′ and 4′. Using B as center and with radii equal to B 1′, B 2′, B 3′ and B 4′ draw short arc between each dentil intersecting the sides of the dentils, as shown, for example, in the dentil *d* by 1, 2, 3, 4 on both sides.

It will be noticed that the sides of the dentils intersect the moldings each at a different angle and a separate pattern is required for each side. To explain the principles we shall show how the pattern for the side *i* D of the dentil *d* is developed, which can then be applied to the other sides. Parallel to *i* D draw any line, as O P. At right angles to *i* D and from the various points *i*, 1, 2, 3, 4 and D draw lines through the line O P indefinitely. Now measuring in each instance from the line I J in the true section take the various distances to the various points in the mold, as K, 1″, 1, 2, 3, 4 and L, and place them on the lines drawn from *i*, 1, 2, 3, 4 and D in the elevation, measuring in each instance from the line O P, as shown by the points K^1, 1‴, 1′, 2′, 3′, 4′ and L^1. Then take the distances from K to M and L to N in the true section and place them from K^1 to M^1 and L^1 to N^1 in pattern for side. Trace a line through points thus obtained, then will K^1 M^1 N^1 L^1 K^1 be the pattern for the side of the dentil *i* D in elevation to fit against the circular molding on the vertical plan *i* D. In precisely the same manner obtain the sides for all the dentils *a*, *b*, *c*, *d* and *e*.

In the dentil *e* the side *m n* intersects but part of the molding, and to show this method clearly where only part of the mold is intersected proceed as follows: Parallel to *m n* draw any line, as M^2 N^2, in line with M N of the true section. At right angles to the side of the dentil *m n* and from the intersections *m*, 1 and 2 draw the lines *m m′*, 1 1^v and 2 2^v, which intersect by lines drawn from points having similar letters and figures in the true section parallel to M N, thus obtaining the intersections M^2, N^2, 2°, 1°, 1^x, K^2 and M^2 in the pattern. A line traced through these will give the pattern for the side *m n* in elevation.

The patterns for the face of the dentils should be pricked directly from the elevation; thus *i f h* D is the face pattern for dentil *d*. The pattern for the top of the dentil *d* is a square piece of metal as long as *f i* and as deep as K M in section; while the pattern for the bottom is as long as *h* D in elevation and as deep as N L in true section. In the same manner obtain the patterns for the faces, tops and bottoms of the other dentils.

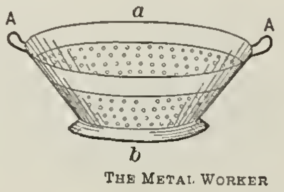
JOSEPH OAT & SON, coppersmiths, Philadelphia, Pa., will erect a new shop at the southwest corner of Bread and Quarry streets, in that city. The estimated cost is $18,000.

PATTERNS FOR COLANDER.

(Without Allowance for Laps.)

A perspective view of a colander, which is usually made from bright IC or IX charcoal tin, is shown in Fig. 1. The handles shown at A and A are tinned malleable iron handles, and are riveted to the body of the colander. They can, if desired, be made from tin plate and soldered on. A wired edge is placed at the top and at the bottom, as shown at *a* and *b*, respectively.

The patterns for the colander are obtained as shown in Fig. 2, in which first draw the center line A B, upon which place the hight of the colander, as shown by A K. Draw the desired dimensions on either side of the center line, as shown by C D, E F and G H. Extend the lines D E or C F, intersecting the center line A B at I. Now with K as center draw the semicircle 0 3 6, which divide into equal spaces, as shown by the small figures 0 to 6. Now using I as center, with radii equal to I E and I D, draw the arcs N O and L M, respectively. Now from any point, as L, draw the radial line L I, intersecting the arc N O at N. On the arc N O, starting from the point N, set off the stretchout of the semicircle 6 3 0, as shown by similar figures on N O. From the center I draw a line through O intersecting the arc L M at M.



Patterns for Colander.—Fig. 1.—Perspective View of Colander.

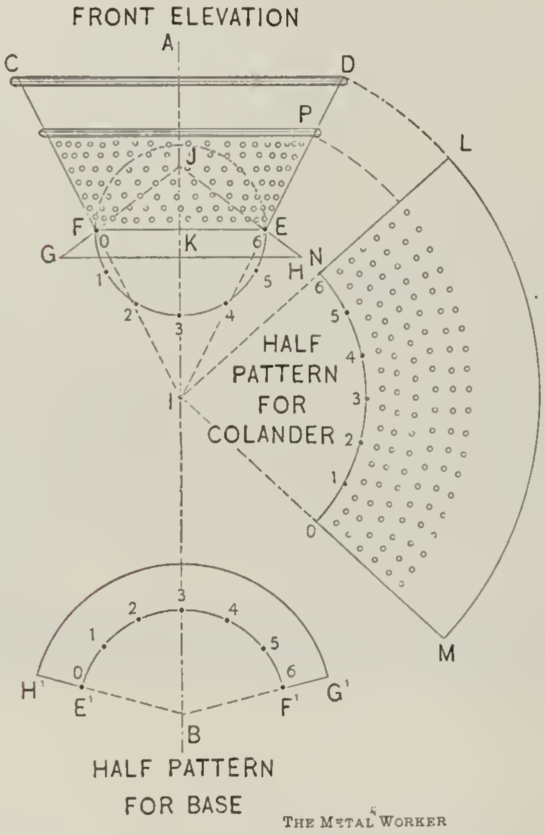


Fig. 2.—Front Elevation and Patterns.

Then will L M O N be the half pattern for the body of the colander, to which laps must be allowed for seaming and wiring.

For the pattern for the base or foot of the colander extend the lines H E or G F in elevation until they intersect the center line at J. Then with radii equal to J F and J G and with B on the center line A B as center describe the arcs E^1 F^1 and H^1 G^1, respectively. From G^1 draw the radial line to B intersecting the inner arc at F^1. Then from the point F^1 lay off on the arc F^1 E^1 the stretchout of the semicircle 6 3 0, as shown by similar figures on F^1 E^1. From the center B draw a line through E^1, extending it until it intersects the arc H^1 G^1 at H^1. Then will H^1 G^1 F^1 E^1 be the pattern for the foot of the colander. Laps must be allowed for edging and wiring. P in the front elevation indicates a small swedge, or bead, turned into the colander, below which perforations are made, which are also shown in the pattern. The bottom of the colander, which should also be perforated, is shown by the circle K.

PRODUCTION OF TIN PLATES AND SHEETS IN 1901.

The annual statistical report of the American Iron and Steel Association for 1901 has just been issued by James M. Swank, general manager of the association. It gives the total production of tin plates and terne plates for the calendar year ending December 31, 1901, as 399,291 gross tons, an increase of 96,626 gross tons, as compared with the year 1900. A table is presented showing the domestic production of tin plates since July 1, 1891, the date on which the McKinley tariff act went into effect. From that date until the close of the fiscal year ending June 30, 1897, the statistics of production of tin plates were regularly collected for the Treasury Department by Col. Ira Ayer, special agent. For the second half of 1897 and the year 1898, they were collected by *The Metal Worker*. For 1899, 1900 and 1901 they have been compiled by the American Iron and Steel Association. From the data thus obtained the following table of the production of tin plates and terne plates in the United States, including the product of tin dipping plants, in the calendar years 1891 to 1901 has been prepared.

Calendar years.	Gross tons.	Calendar years.	Gross tons.
1891 (last six months)	999	1897	256,598
1892	18,803	1898	326,915
1893	55,182	1899	360,875
1894	74,260	1900	302,665
1895	113,666	1901	399,291
1896	160,362		

The production of plate and sheet iron and steel in the United States in 1901 amounted to 2,254,425 gross tons, against 1,794,528 tons in 1890, an increase of 459,-897 tons, or over 25 per cent.

The following table gives the production by States:

States.	Gross tons.
New England	416
New York and New Jersey	6,512
Pennsylvania	1,572,500
Delaware and Maryland	29,484
West Virginia	31,928
Kentucky and Alabama	47,503
Ohio	294,266
Indiana, Illinois, Michigan, Missouri and Colorado	271,816
Total	2,254,425

The production of black plates for tinning alone in 1901, which is included in the above, was 385,026 gross tons. Of this total Pennsylvania made over 50 per cent., New Jersey, Maryland, West Virginia, Ohio, Indiana, Michigan and Missouri, also made black plates for tinning in 1901.

THE ROOFING SLATE TRADE.

Those who have been engaged in the roofing slate trade for a generation declare that never in their experience has there been such a sharp scarcity of slates as exists in the United States at the present time. The cause for this scarcity is twofold. First, the activity in building operations throughout the country has brought about a pronounced increase in the demand for slates for roofing purposes, and, secondly, the fact that the stocks at quarries have been allowed to run down in the past few years making the supply of slates unusually light. It is stated that the available stocks at quarries on January 1 of this year were 150,000 squares below the average. Moreover, there was unusual interruption in the operations at the quarries last winter. Although the quarrymen, in anticipation of a heavy building season, started into full operation rather earlier than usual this spring, they have been steadily behind their contracts and have been getting more so from week to week as the season progressed. Most of the quarries, both in Pennsylvania and in Vermont, have their product for many months to come fully booked, and from present indications it is likely that they will not be able to fill the requirements of the home trade by many hundreds of carloads this summer.

John Galt & Sons, 253 Broadway, New York, who are among the oldest and largest concerns handling roofing slates in the United States, advise us that for the past two or three months they have been absolutely unable to book any orders for spot delivery, notwithstanding that prices have advanced sharply and many of their customers are willing to pay almost anything in reason in order to obtain the necessary material to fill their contracts for slate roofing. The demand this year has covered all grades and qualities of slate. The existing scarcity applies just as much to the Northern varieties as to those of Pennsylvania. In former years there has sometimes been a shortage of some particular kinds of slate, but it has usually been made up by other kinds. But this year the scarcity of material is general.

The market for roofing slates at the present time is strong and rising. A sharp advance was made by the manufacturers a couple of weeks ago, and further advances in some kinds of slates have been announced within the past few days. The market price at the present time is governed almost entirely by the needs of consumers and the ability of the manufacturers to fill orders. Under the circumstances it is not surprising to learn that the export trade in American roofing slates has fallen off to almost the vanishing point.

W. H. Barnard & Co.

The sheet metal workers of Norfolk, Va., went out on strike this week, but the men employed in the shop of W. H. Barnard & Co. of that city, appreciating the kindly feeling that had always been displayed toward them by Mr. Barnard, refused to go out with their fellow workmen. In justifying their action in refusing to strike, the tinsmiths employed in Mr. Barnard's shop issued a statement to the public, in which they say that whenever they have been in trouble or need the firm have never denied them a favor. Several years ago they were notified that they could knock off work at 4 o'clock on Saturdays, a system which was afterward followed by all the other shops in the city. A few years later the firm, without any request being made, volunteered to allow their men to work nine hours a day instead of ten hours. This system also was then followed by the other shops in the city. The men say that they have received the highest rate of wages paid to tinners in the State of Virginia, and a number of them had their wages raised from time to time without request. They add that the prevailing number of hours of labor for a day's work in sheet metal shops for some time past has been eight hours, and in their opinion if W. H. Barnard & Co. return to the nine-hour system they will do so not in a spirit of injustice to the workmen but as a matter of business necessity. The men express their determination not to give up their employment, as to do so would stamp them as ingrates.

FLASHINGS

The United States Charcoal Iron Company, with main office at 211 Market street, Camden, N. J., have been incorporated, with a capital stock of $250,000, by J. Jones Hudson, Percy A. Marvel and John O. Wilson, to manufacture Charcoal Iron Plates.

R. Wilson & Son, Springfield, Mass., have been given the contract for the Metal Work, including Skylights, &c., on the building of the Metropolitan Furniture Company in that city. The firm are also doing the plumbing work in the same building.

The G. Bickelhaupt Skylight Works, 243-245 West Forty-seventh street, New York, are sending out a little folder descriptive of the Bickelhaupt Patent Skylight Lift, a simple device designed to ventilate the home and to obtain pure air from above through the Skylight. These Lifts can be applied to either hipped or flat Skylights. When they are closed the Skylight is securely locked.

The Youngstown Iron, Sheet & Tube Company, Youngstown, Ohio, have taken over the Alice Furnace of Pickands, Mather & Co. of Cleveland, Ohio, which has a capacity of 245 tons of Iron every 24 hours.

Beseman & Bostwick, Hartford, Conn., have been awarded the contract for the Sheet Metal work on the new residence of George B. Thayer, at West Hartford.

Encouraged by the recent increase in the demand for their product, a number of the Welsh Tin Plate manufacturers are making preparations to increase their output by the addition of new mills or remodeling of old ones.

The British Board of Trade returns on the exports of Tin Plates from British ports in the month of May show that 6540 tons were shipped to the United States, as compared with 4886 tons in May, 1901. For the five months ended May 31, 1902, the total shipments of British Tin Plates to this country amounted to 33,105 tons, as against 18,783 tons for the corresponding five months of 1901.

The Foreman Can Company, Irwin, Pa., have been incorporated with a capital stock of $22,000 by Amos L. Foreman and Benjamin M. Charles of Pittsburgh, and Frank W. Taylor and John I. Stewart of Irwin.

Work on the new eight-mill plant which the Pope Tin Plate Company are erecting at Steubenville, Ohio, is being rapidly pushed, and it is expected that it will be in shape for operation before the end of next month.

The ten Sheet mills and the forge department of the Newport Rolling Mill Company, Newport, Ky., are reported as working full time with most satisfactory prospects for the future.

Cullen & Lurie have opened a Sheet Metal working shop at 16 Mulberry street, Hartford, Conn.

The management of the Greer and Shenango works of the American Tin Plate Company, at New Castle, Pa., has given notice that these plants will probably be operated right through the summer months and that there will be no vacation allowed to the employees.

The Cedartown Tin, Sheet Iron & Bicycle Company of Cedartown, Ga., have been incorporated with a capital stock of $10,000 by J. T. McAlpin and I. P. Mee.

The hot and cold mills in the Falcon Works of the American Sheet Steel Company, at Niles, Ohio, are being removed to the Struthers Works of that concern, at Struthers, Ohio. The puddling and skelp mills in the Falcon Works will be allowed to remain there and will probably be operated by the American Steel Hoop Company, but it is possible the skelp department may be operated by the Republic Iron & Steel Company.

At the Laughlin Works of the American Tin Plate Company, at Martins Ferry, Ohio, 15 mills are being operated. This is the second largest individual tin plate plant owned by the American Tin Plate Company.

The new plant of the Griffiths Charcoal Iron Mill, at Washington, Pa., is nearly completed and will probably be in operation by July 15. This plant is equipped with forges, hammers, Bar mills and Tin mills for making Tin Plate and Terne Plate from a charcoal iron base.

The Bostwick Steel Lath Company of Niles, Ohio, have placed a contract for the erection of a new plant, which will increase their facilities considerably. Considerable new machinery will be purchased. The company held their annual meeting a few days ago and declared the usual 5 per cent. semi-annual dividend. Officers were chosen as follows: W. G. Hurlburt, president and treasurer; J. O. Hart, vice-president; E. J. Job, secretary.

The John Schwing Corporation, Bridgeport, Conn., have been incorporated with a capital stock of $5000, to manufacture Cornices, Skylights and all kinds of Architectural Iron and Copper Work. The company are successors of John Schwing, who has carried on a similar business at 234-236 Stratford avenue, Bridgeport, for some years past.

The Buckeye Stamping Company of Columbus, Ohio, have been organized with $20,000 capital stock by E. C. Derby, J. C. Burns, W. T. Smith, P. A. De Long and C. A. Morningstar. They will make Tin Cans, Tin Boxes and Metal Specialties.

The Supply Meetings at Niagara Falls.

For the second time the Eastern and Western manufacturers and dealers in plumbing goods and supplies have held a joint meeting. The first meeting took place about a year ago at Detroit. The Central Supply Association had arranged to hold their quarterly meeting in that city, and the Association of Manufacturers and Jobbers of Plumbing Supplies issued a call for a meeting at the same time and place. This year the Western body accepted the invitation of the Eastern body to meet with them at Niagara Falls, N. Y., on June 24. The result was a new record in the matter of attendance, which far surpassed the number at the meeting in Detroit. A partial list of those who were at Niagara Falls includes the following:

Harry S. Martin, Dunkirk, N. Y.
Fred. W. Smith, Dunkirk, N. Y.
A. D. Sanders, Chicago.
J. M. Young, Pittsburgh.
A. C. Cogswell, Detroit.
W. B. Hubbard, Boston.
E. E. McNair, Buffalo.
C. H. Rose, New York.
Wm. H. Haines, Philadelphia.
W. C. Rumsey, St. Louis.
F. M. Knapp, Pittsburgh.
C. K. Foster, Chicago.
Frank T. Bassett, Boston.
E. R. Stoughton, Buffalo.
W. A. Myler, Pittsburgh.
Arthur M. Parker, Detroit.
W. G. Cook, Trenton, N. J.
F. V. Bartlett, Detroit.
E. V. Skinner, New York.
John E. Fitzgerald, Pittsburgh.
A. F. Blesch, Detroit.
M. W. Sales, Detroit.
A. I. Lewis, Detroit.
James Harvey, Detroit.
John Walker, Detroit.
George F. Hughson, Chicago.
H. L. Andrews, Pittsburgh.
George I. Blowers, New York.
George S. Owens, Detroit.
William B. Blowers, Mansfield, Ohio.
J. E. Mohler, Baltimore.
Wm. F. Morgan, Chicago.
F. J. Knox, Hartford.
F. R. Dengel, Milwaukee.
J. P. Rundle, Milwaukee.
A. Y. MacDonald, Dubuque.
A. F. Gartz, Chicago.
J. E. Holland, Chicago.
George H. Tompkins, Chicago.
W. E. Clow, Chicago.
Paul Blatchford, Chicago.
N. W. Blatchford, Chicago.
J. K. Allen, Chicago.
Henry Stein, New York.
W. E. Sloan, Rochester.
B. O. Tilden, Detroit.
Wm. McShane, Baltimore.
A. E. Douglas, St. Louis.
E. Morris, Detroit.
J. F. Grosswiller, Toledo, Ohio.
W. G. Radcliffe, Cleveland.
A. M. Mueller, Decatur, Ill.
M. W. Mueller, Decatur, Ill.
G. A. Caldwell, Decatur, Ill.
G. H. Merkel, Cincinnati.
A. Fowle, New York.
N. O. Nelson, St. Louis.
I. N. Glauber, Cleveland.
C. J. Hills, Haydenville, Mass.
S. O. Dugger, Chicago.
J. P. Dugger, Chicago.
W. B. Tracy, Chicago.
Wm. M. Webster, Chicago.
John T. Wolff, Chicago.
Herman Hoelscher, Chicago.
J. J. Ryan, Chicago
Wm. T. Doyle, Milwaukee.
J. B. Kalvelaze, Milwaukee.
E. F. Niedecken, Milwaukee.
C. W. Woodward, New York.
Frank S. Hanley, New York.

THE BRASS MANUFACTURERS' ASSOCIATION.

The first meeting at Niagara Falls was that of the Brass Manufacturers' Association, which was opened on Monday, June 23, by President A. D. Saunders. On the roll call by Secretary William T. Doyle a large attendance was noted. This meeting, like all the others, was open to members only; but the subject of the discussions, it was learned, had reference to the conditions prevailing in this branch of trade and efforts for the elimination of bad practices and to secure united effort for the betterment of the trade. Some time was given to a new classification of brass goods, which some of the members stated would effect a slight advance in prices, amounting on the average to about 2½ per cent. After adjournment there was evidence that the deliberations of this body of tradesmen had been satisfactory.

THE ASSOCIATION OF MANUFACTURERS AND JOBBERS.

On Tuesday morning, June 24, President Frank J. Knox called to order a meeting of the Association of Manufacturers and Jobbers of Plumbing Supplies in one of the ballrooms of the Cataract House. The report of Secretary C. W. Woodward showed a good attendance. While various matters of interest to the association received attention the greatest interest centered in the report of the Conference Committee, which had met with a like committee from the National Association of Master Plumbers at Atlantic City on June 13. The report was discussed, and the action of the committee indorsed.

THE CENTRAL SUPPLY ASSOCIATION.

In another of the large ballrooms of the Cataract House on Tuesday morning the Central Supply Association held a meeting with President E. Morris in the chair. Secretary Paul Blachford brought to the attention of the association the different communications that had been received since the last meeting, and after these and some special matters had been disposed of, the report of the Conference Committee was heard with close attention and the action of the committee approved.

THE JOINT MEETING.

On Tuesday afternoon the members of the Association of Manufacturers and Jobbers and of the Central Supply Association held a joint meeting, presided over by E. Morris, for the purpose of hearing and acting upon the report of the Conference Committee. This report was made by Frank J. Knox, who had acted as chairman at the conference at Atlantic City, and was supported by William H. Haines, G. H. Merkel and J. B. Rahm. The report was discussed and indorsed, and the chairman was instructed to communicate the result immediately to President Hornbrook of the National Association of Master Plumbers. As far as can be learned, the conference has not definitely changed the conditions obtaining previous to the sitting of the committee, although it is clear that the disposition of the two bodies to confer has been improved.

THE PRESS.

This is the first meeting of the supply associations to be generally attended by representatives of the trade press. As the meetings have no open sessions, they merely afford opportunities for extending and renewing acquaintance. *The Metal Worker* was represented by Frank K. Chew, *Domestic Engineering* by John K. Allen and E. Crawford, *The Plumbers' Trade Journal* by James M. Heatherton, A. A. Ainsworth and E. H. Southworth and the *Engineering Review* by Chauncey L. Williams, S. D. Bruce and L. D. Collins.

THE GOLF TOURNAMENT.

Owing to the fact that so many members of the association are golf players, and that the different meetings afford opportunity for a little relaxation from the strain of business demands, the Trade Golf Association was formed. Through the efforts of the secretary, Chauncey L. Williams, 910 Kedsie Building, Chicago, the links of the Niagara Falls Golf Club were secured for a tournament. After the preliminary trials for classification, the various pairs started in to compete for the different prizes with the following result:

S. O. Dugger won a very pretty silver cup presented by the *Engineering Review* for the best score for the first 18 holes played. Mr. Dugger also won the Association Challenge Cup, which must be won three times to become his property, beating A. Y. MacDonald, who secured a silver medal presented by the Crane Company.

J. B. Rahm won the silver cup presented by *Domestic Engineering*, beating J. P. Dugger, who secured another of the silver medals presented by the Crane Company.

The very pretty cup, of a design to attract the golf player, presented by the United States Radiator Company, was won by Chauncey L. Williams, while his opponent, F. W. Smith, won one of the Crane Company's bronze medals.

Harry S. Martin won the silver cup on an ebony pedestal presented by *The Plumbers' Trade Journal*, and E. R. Stoughton was pleased to get a Crane Company's bronze medal.

A. I. Lewis successfully contested with Paul Blatchford for a Crane Company bronze medal against the John Davis Company prize of a dozen golf balls.

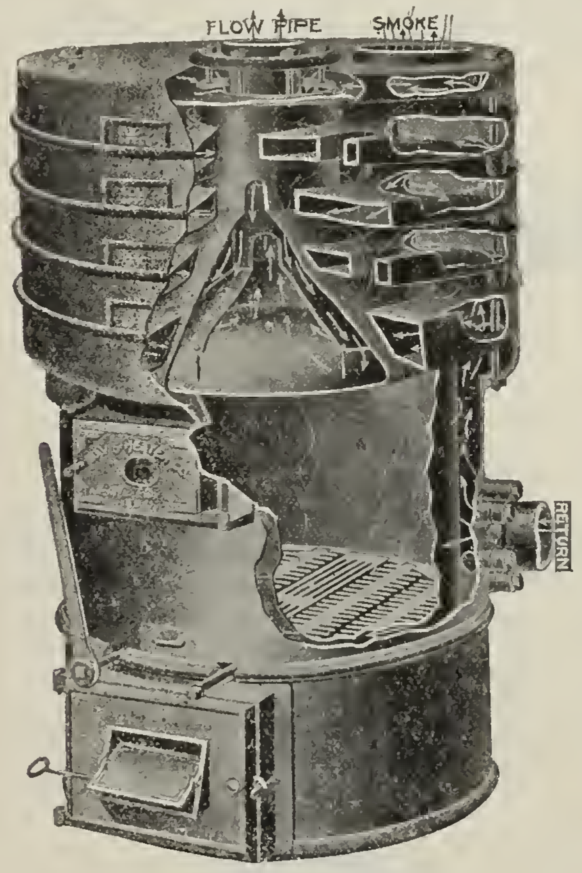
A. A. Ainsworth tells a golf story of how he had Murray Sales beaten in the sixth flight, but got into the furze, and Murray now wears a Crane Company bronze medal. Sam Dugger swatted a ball 195 yards and won the driving contest and a dozen golf balls presented by the John Davis Company.

This outing closed a very enjoyable joint meeting of the supply associations.

The Journeymen Plumbers' Association of Geneva, N. Y., have instituted proceedings against Mayor Daniel E. Moore to compel him to appoint a Board of Examining Plumbers. The City Attorney claims that the law requiring the examination of plumbers has been repealed, but the counsel for the plumbers holds that it is still in full force and that it is the duty of the Mayor to make the appointment asked for by the plumbers. Mayor Moore thinks that the city is not large enough to need such a board and that the expense of its maintenance would be an unnecessary burden.

The Davis Hot Water Heater.

The Davis Heater Company of Racine, Wis., are now manufacturing the Davis Heater, of which a broken view is presented herewith. In explanation of the operation of the heater, which will be readily apprehended by means of the accompanying view, the company state that the water, after entering the apparatus, flows around the fire pot and around the sections up to the top of the heater. From there it drops down through the drop tube and comes in contact with the crown sheet, which is immediately over the fire, where it is exposed to the maximum of heat that is in the fire. Moreover, all the water must come in contact with this heat. In most of the ordinary types of heater—viz., those built up of water sections placed one above another, with holes for the water to pass up from one section to another—only the water in the section immediately over the fire pot can get the intensest heat of the fire. It is in this particular that the Davis Heater differs from others and secures a decided advantage over them, as by the arrangement of the apparatus all the water passes directly over the hottest section of the fire. These heaters are designed for the warming of buildings of every description, and the manufacturers say that a number of them have been installed in different places throughout the country from Providence, R. I., to Denver, Col., and from Marquette, Mich., to Savannah, Ga. Further information regarding these heaters will be cheerfully furnished by the company on application. The Davis Heater Company also manufacture heaters for warming water for domestic purposes, natatoriums, baptisteries, &c.

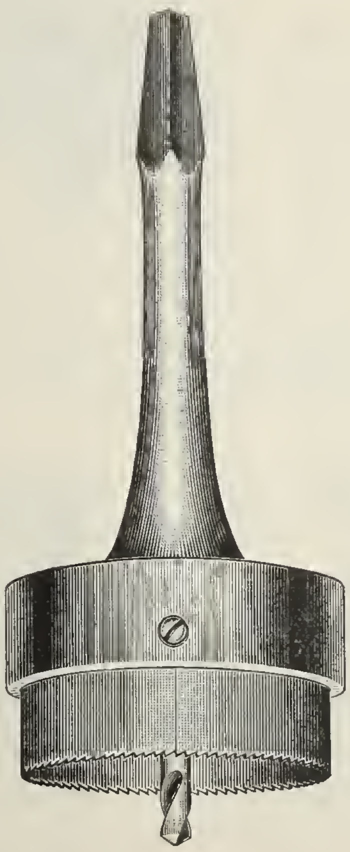


The Davis Hot Water Heater.

The new Board of Plumbing Examiners appointed by Mayor Phillips of Springfield, Ill., is composed of Plumbing Inspector Frank W. Patterson, representing the Board of Health; Leon P. Hopkins, representing the master plumbers, and D. C. Seagraves, representing the journeymen plumbers. The board has been given quarters on the City Hall. Each applicant for a plumber's license will be compelled to secure a percentage of 70 per cent. in an examination in both theoretical and practical work. It is expected that the board can accomplish much good in wiping out incompetent workmen. The fee for a certificate for a master plumber is fixed at $5, and for a journeyman at $1.

The Plumbers' Hollow Mill Saw.

The accompanying cuts relate to plumbers' hollow mill saws offered by the West Haven Mfg. Company, New Haven, Conn. The tool is intended for use in an ordinary bit brace, and is designed to make holes in waste pipes and stacks the exact pipe size for tapping in any material or for any connections where the pipes or appliances are already placed, often saving, it is stated, the cost of tearing out whole lengths of pipe with their expensive connections. It is explained that the tool obviates the use of a saddle hub in a great many cases and reduces the work of applying one to the minimum where it is required; also that in cases of stoppage in waste pipes a hole can be cut out and afterward plugged. The tool, it is pointed out, will often save the cost of taking nearly finished jobs apart and carrying a portion to the workshop. The tool is made in five sizes—1, 1¼, 1½, 2 and 2½ inches—and packed in a wooden case, together with one extra set of saws and two drills with each set.



The Plumbers' Hollow Mill Saw.—Fig. 1.—General View.

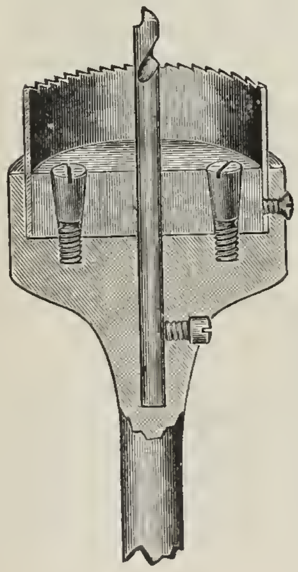


Fig. 2.—Construction of Plumbers' Hollow Mill Saw.

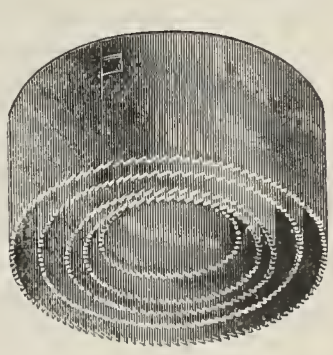


Fig. 3.—Extra Saws.

The contract for the plumbing and heating of the St. James' Roman Catholic School, Grand Rapids, Mich., has been awarded to Weatherly & Pulte, of that city.

New Combination Pipe and Monkey Wrench and Pipe Cutter.

The Bonney Vise & Tool Works, Incorporated, Philadelphia, Pa., are placing on the market a new combination pipe and monkey wrench and pipe cutter, as shown in the accompanying illustrations. It is provided with a toggle jaw to make a sure grip and secure instant release. By withdrawing the pin and reversing the toggle jaw the tool is in shape for use as a pipe cutter, which reversal can be made in a few seconds. By throwing the toggle up at right angles with the wrench, as shown in Fig. 2, the pipe can be lifted out of the V without running the jaw back, which is referred to as a great saving of time. This feature is also applicable to the use on different sizes of pipe, whereby 1 or 2 inch pipe can be handled with little change in the position of the jaws. The tool is furnished in black or bright finish, with long or short nut, and in sizes that will take pipe from ¼ to 3 inches in diameter. The head and bar of the wrench are alluded to as a one-piece forging, made from the best material, and all parts are interchangeable. The company claim that the wrench not only combines the superior qualities of a gas pipe wrench, but also the requisite combinations of a regular nut wrench and pipe cutter.

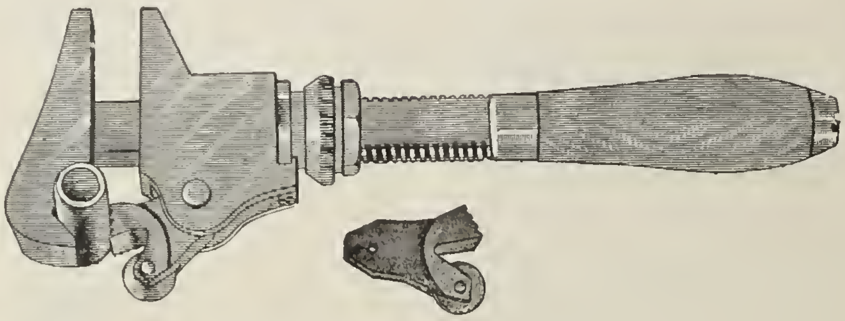


Fig. 1.—New Combination Pipe and Monkey Wrench and Pipe Cutter.

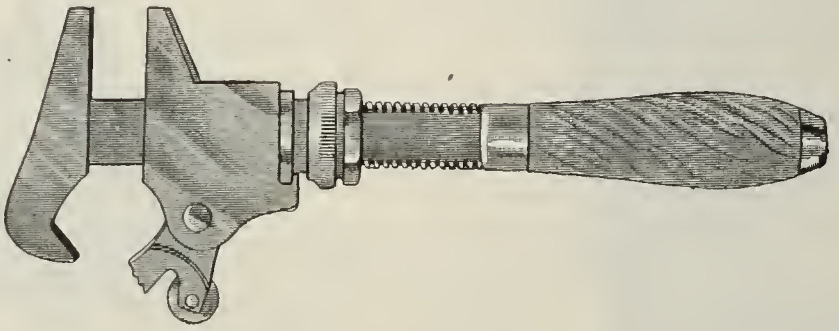


Fig. 2.—The Toggle at Right Angles with the Wrench.

Galvanized Steel Chain Pump Tubing and Steel Curbs.

The accompanying cuts relate to galvanized steel chain pump tubing and steel curbs offered by the St. Joseph Pump & Mfg. Company, St. Joseph, Mo. The tubing shown in Fig. 1 has an inside diameter of 1⅝ inches, and is made in lengths of 6, 8 and 10 feet. It is referred to as being true and accurate, with malleable screw couplings, while the reservoir has malleable iron ears for protection, through which a wrought iron stirrup protrudes to assure the secure fastening of the tubing to the pump. The ears are riveted on to the reservoir, after which the pipe is galvanized. The box of the curb shown in Fig. 2 is made of No. 22 galvanized steel, painted two coats, stenciled and varnished. It is provided with malleable iron rims on the top and bottom. The manufacturers remark that, unlike wood tubing, which becomes slimy, filled with bacteria, smelling badly and often tainting the water, galvanized steel tubing remains clean and wholesome. Rubber buckets are preferred for use in this tubing, and it is pointed out that the buckets will last longer than in wooden tubing, because the hole is perfectly smooth and does not wear larger and let the water run back. The large reservoir at the top prevents the water wasting.

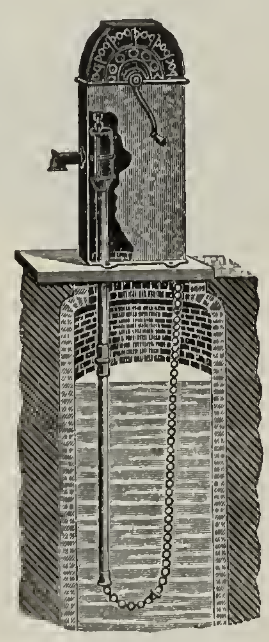


Fig. 2.—Steel Pump Curb.

Fig. 1.—Galvanized Steel Chain Pump Tubing.

New York City Notes.

The delegates to the national convention all arrived home safe and sound on Saturday last. They all express themselves as pleased with Atlantic City as a convention place, and also with the general results of the convention.

* * *

President Hornbrook and staff, together with several Western and Southern delegates, paid a visit to the city, and with Messrs. I. J. Brown, Donohoe, E. J. Brady, Gaynor and some others, made a trip to Manhattan Beach and Coney Island last Sunday. It is needless to say that they had an enjoyable time. Tuesday evening I. J. Brown entertained a number of the visitors at his residence.

* * *

The coal strike has caused some of the large building operations on hand to slow down, owing to the inability to get iron work as needed. This has caused delay with several of the plumbers.

* * *

The Board of Education is behind time this summer in giving out vacation repair jobs. Many plumbers who do this particular kind of work are waitng for plans to figure on.

* * *

Rossman & Bracken have the plumbing contract on the Hospital Building of the Woman's Reformatory, at Bedford Station, and have a force of men at work on the same.

* * *

Bronx Branch are going to give their first annual outing at Lohbauer's Park, Westchester, on Thursday, July 17. The committee in charge are: J. P. Muller, chairman; D. L. Delaney, D. Durie, Jr., J. V. McEvily and J. W. Sweeney. Returns for tickets can be made before July 10 to J. W. Sweeney, 2864 Webster avenue.

* * *

Among the busy plumbers are John Hogan, with the new Hall of Records at Chambers and Centre streets; E. J. Hurley, with an apartment house on Eighty-second street between Broadway and West End avenue; Stroh & Huber, with an apartment at 124-126 West Forty-seventh street; W. M. Beigan, who is plumbing a storehouse at 527-531 West Thirty-sixth street, while Charles Hensle, in addition to his other numerous jobs, is just starting an apartment on 131st street, between Fifth and Lenox avenues.

* * *

Fred. Turkowsky of 28 Second avenue has a good overhauling job in the Post Graduate Hospital, at Second avenue and Twentieth street, where he is putting in some new closets, sinks and needle baths, and J. W. Cooney has quite a job at Tottenville, S. I., fitting up the reception house of the St. John's Guild.

* * *

Among the new jobs lately given out, Jos. Bloch has a tenement at Twenty-ninth street and Second avenue and another on Eighty-fifth street, near Third avenue; Elias Myers is plumbing a dancing pavilion and hotel that are being erected at Eighth avenue and 155th street, and Spencer & Polacheck have a large apartment house on Ninety-fourth street, between West End avenue and Riverside Drive.

New Sanitary Ware Pottery.

The Fidelity Pottery Company of Trenton, N. J., have been organized, with Charles H. Baker as president and J. H. Cogill as secretary and treasurer, and have purchased the plant formerly operated by the Egyptian Pottery Company. The plant will continue, under entirely new management, the manufacture of sanitary earthen ware of a superior quality, embracing all the latest designs and made from the most approved models. The company say that only the very best goods will be shipped from this plant, that high grade materials will be used exclusively, and that the utmost care and skill will characterize the manufacture of their goods. They will manufacture a complete general line of sanitary ware on the standard list, and from time to time such specialties will be added as the trade may demand or suggest. The company promise careful attention to the needs of the trade, and assure their patrons that all orders or inquiries shall have personal and prompt attention, thus hoping to secure a goodly portion of the patronage of the jobbing trade, to which they will sell exclusively.

Two New Gasoline Torches.

The Clayton & Lambert Mfg. Company, Detroit, Mich., have added two more gasoline torches to their line, designated as No. 31 and No. 32, which we present in the accompanying illustrations. The No. 31 torch shown in Fig. 1 is designed for the use of mechanics who desire a powerful burner, capable of doing heavy work out of doors in cold or windy weather. The manufacturers claim that the generator has unusually great generating power, and that it will produce a clear, blue, intensely hot flame which is under the perfect control of the operator, and that it is very economical in the use of gasoline. The tank is of quart size, drawn out of heavy brass and free from seams. All the fittings are heavy, reinforcements being used to make a strong tank. A brass air pump of the latest design screws into the tank and is submerged in gasolene, which aids in keeping it cool and also protects it from injury. The torch is supplied in polished brass or nickel plated as desired. The No. 32 torch shown in Fig. 2 is exactly like the No. 31, except that a hook and support are provided, so that soldering coppers may be heated. This makes it peculiarly adapted to the use of repair men and mechanics who are called upon to do work of this kind. These torches are claimed to be of first-class workmanship and good material, and they are sold under the broadest kind of guarantee.

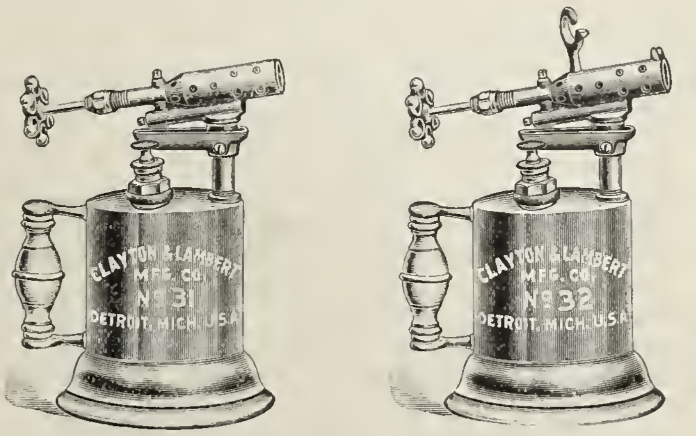

CLAYTON & LAMBERT MFG. CO. No 31 DETROIT, MICH. U.S.A.
CLAYTON & LAMBERT MFG. CO. No 32 DETROIT, MICH. U.S.A.

Fig. 1.—No. 31 Torch. *Fig. 2.—No. 32 Torch.*

Two New Gasoline Torches.

Queens Borough Plumbers' Outing.

Queens Branch of the New York Master Plumbers' Association gave their annual outing on Thursday, June 26, at Donnelly's Grove, College Point, L. I. The committee in charge was comprised of Messrs. Gross, Perry and O'Connor. The association was well represented by members from Long Island City, Newtown, Flushing, the Rockaways, Jamaica and other places in the borough.

The bowling prizes were won by George Gross, with a score of 113; Tom Freeman, with 112; J. H. Cornell, with 109, and Geo. Schultz, with 103. The ladies' bowling tournament was won by Mrs. George Gross, Mrs. Reising and Mrs. Kumpfer. A six-innings ball game was played between the plumbers and the supply trade. Batteries: Plumbers, Cornell and Gaeby; Supply Trade, Brown and Ruhland. The score was 26 to 13, in favor of the plumbers.

Among the guests present were Messrs. I. J. Brown, B. F. Donohoe, F. F. Gaynor and John Renehan of Manhattan, and D. Donegan, Ed. Macdonald and G. W. Smith of Brooklyn. The supply trade was also well represented.

Heating and Plumbing Notes.

The Southern Heating Company, Memphis, Tenn., have been awarded the contract for a low pressure steam heating apparatus in the Kortrecht Building, in that city, at their bid of $1891.

The Plumbers' Laborers' Union of St. Louis, Mo., and vicinity have been granted their demand for an increase in the wage scale to $2.80 per day, the rate to be in effect for two years from June 20.

The strike of the plumbers of Youngstown, Ohio, which was initiated on May 1, has been settled and the men have returned to work. The details of the settlement have not been published, but it is understood that it was made on the basis of mutual concessions by the master plumbers and the journeymen.

The journeymen plumbers of New Haven, Conn., have reorganized and elected John Roches as president, James Tiernan as vice-president, Patrick O'Meara recording secretary, M. A. Turbot financial secretary, and John Shevlin treasurer.

James A. Trane of the James A. Trane Vacuum Heating Company of Chicago and E. P. Allen of the Norwall Mfg. Company of that city, who have been in the East attending the different conventions at Atlantic City, were visitors at *The Metal Worker* office this week. The new devices which they brought to the attention of the delegates received more than passing notice.

The Gurney Heater Mfg. Company, 74 Franklin street, Boston, Mass., are sending to those who did not find it convenient to enjoy attending the different conventions at Atlantic City, a very attractive souvenir circular in the interest of their goods. It is in the form of a folder showing on the front page an hour glass, snuffers and a candle, while on the back page is a picture of a candle in an old-fashioned candlestick with the injunction "Keep it Burning." When the folder is opened it is clear that it is intended to give "a little light" in regard to the economy of operation and the durability of the Gurney Boilers and Radiators, and also the facility with which these Boilers can be set up. "A little light" is also shed upon the company's Narrow, Duet and Tremont Radiators made in different hights and in one, two and three columns. This card is well calculated to attract attention, and those who desire more detailed information can secure it by asking for a catalogue, giving full particulars in reference to the company's goods.

William A. Lowe, one of the leading plumbers of Portland, Maine, died in that city on June 18. He was born in Bristol, Maine, 60 years ago, and when 20 years of age went to Portland, where he entered the employ of S. D. Merrill, then the leading plumber of Portland. In a few years he bought out Mr. Merrill and went into business for himself, conducting it successfully up to the time of his death. Mr. Lowe leaves a widow and one daughter.

The strike of the gas fitters employed by the Hudson County Gas Company, Jersey City, N. J., has been settled by an advance of 25 cents per day in wages.

The strike of the journeymen plumbers at Plainfield, N. J., has been settled and the men have returned to work. By the terms of the agreement the journeymen will receive $3.25 per day, an increase of 25 cents over their former wages, but 25 cents less than the amount demanded.

A 50-year franchise has been granted by the City Council of Clarksville, Tenn., to the Clarksville Street Steam Heating Company. According to the terms of the franchise the plant must be in operation in two years' time, otherwise the franchise will be forfeited. The company are also limited to the use of steam and hot water for heating purposes.

An amendment to the city ordinance has been adopted by the City Council of New Britain, Conn., making master plumbers take out a license before August 1, 1902, and placing the fee for such license at $1. Violations of this ordinance are subject to a fine not to exceed $50.

C. H. Julian of San Diego, Cal., has been awarded the contract for the plumbing work on the new United States Quarantine Station at that place.

H. C. Clark of Delaware City, Del., has been awarded the contract for plumbing the Fort Des Moines Army Post, Des Moines, Iowa, at his bid of $9000. The steam heating contract has been awarded to Harris & Algor of Camden, N. J., at $6000.

An ordinance has been passed by the City Council of Galesburg, Ill., providing that licenses shall be issued to the present licensed plumbers without fee to the city. New plumbers, however, are required to be examined, and if admitted, to pay a fee of $5 to the city. The old city ordinance has been amended by striking out the section requiring a license fee of $20, to be paid by sanitary plumbers and by plumbers working at the city water works.

Riley Brothers, Lawrence, Mass., have been awarded the contract for plumbing the new addition to the Orphan Asylum in that city.

Bids will be received until July 9 for the plumbing of the Post Office Building at Winnipeg, Man. The form of tender, together with plans and specifications, can be obtained from the Public Works Office, Post Office, Winnipeg, and at the Department of Public Works, Ottawa, Canada.

The plumbing and ventilating systems of the United States ships "Raleigh" and "Detroit," now at the Charlestown Navy Yard, Boston, are said to be the best and most elaborate installed on board United States war ships. The work is being done under the supervision of Leading Ship Plumber Charles Drake of the Construction Department at the Navy Yard.

The plumbing and steam fitting establishment of John B. Smith & Co., Lewiston, Maine, was badly damaged by fire on the morning of June 17. The loss is estimated at $5000 on the stock and $5000 on the building, both building and stock belonging to the company. The origin of the fire is believed to be incendiary. The loss is reported to be covered by insurance.

Francis Brothers & Jellett of Philadelphia will install a steam heating system, costing $9800, in the Jewish Hospital in that city. The firm have also been given the contract for a steam heating and electric plant, costing $14,000, including one high pressure boiler and three cast iron hot water heaters, in a house on Greene street, Germantown, Pa., and one for a similar plant, to be installed at the factory of the E. G. Chester Company, Cedar and Huntington streets, at a cost of $14,000.

The new plant of the Gadsden Pipe & Foundry Company, Gadsden, Ala., was placed in operation last week. The company have a large number of orders on their books, and it is likely that they will be forced to increase their facilities in the near future.

The contract for heating the new school house of the Eighth Street Lutheran Church, Oshkosh, Wis., has been awarded to W. S. Patterson of Appleton, Wis., at his bid of $2625.

Francis G. Ward, Commissioner of Public Works, Buffalo, N. Y., has advertised for bids, to be received until July 2, for the plumbing work, including labor and material, for the new Shelter Houses on the Johnson Street, Broadway Market, and Hamburg Canal playgrounds in that city.

The Aermotor Company, Chicago, are sending out a new catalogue and price-list of Aermotors, Aermotor Cylinders, Bell Towers, Pumps, Tanks, Valves, &c.

The differences which existed between the master and journeymen plumbers of Bridgeport, Conn., resulting in a strike of over six weeks' duration have been settled by arbitration, and the men have returned to work. The settlement provides for a minimum wage of $3 for an eight-hour day to men who have worked at the trade for six years or more; to those who have worked for less than six years and more than two, $2.50, and for apprentices just out of their time $2.

For work performed on legal holidays double time is to be paid, and for work after 5 p.m., time and a half. One apprentice is allowed for every two men, and one for every three additional men. The agreement is to be effective for three years.

We have received from the Thomas P. Ford Company, 81 Centre street, New York, a hanger which will be found useful for reference by those to whom it is sent. The main part of the sheet, which is 22 x 23 inches in size, is occupied by a colored map of the world, with the various steamship routes traced in red, and the distances in miles between the various ports. The map is surrounded by pictures of the flags of all nations in their proper colors, and the space at the top and bottom is devoted to views of some of the Ford Steam and Water Specialties for steam heating, power and plumbing systems, manufactured by the concern, including their Standard Pump Regulating Valves, Balanced Tank Valves, Steam Separator and the Ford System for Controlling Elevator and Fire Pumps. A note at the bottom of the hanger invites the trade to send for a catalogue of the products of the concern. The sheet is bound with brass at top and bottom, with a brass eyelet for hanging.

The contract for plumbing and steam heating the new Armory to be erected on McKinley avenue, Norwich, Conn., has been awarded to the Vanderman Plumbing & Heating Company of Willimantic, Conn.

In addition to the three public baths for which the Board of Estimate and Apportionment of New York City has appropriated $325,000, a large public bath is to be constructed on the East Side, as a private gift. Mrs. A. A. Anderson has purchased two old buildings at 325 and 327 East Thirty-eighth street, on a plot, 60 x 100 feet, which will be utilized as a site for a large model bath house for the poor.

The Buckingham-Routh Company, New Haven, Conn., have been awarded the contract for the plumbing in the new building recently erected in that city by the Bigelow Company.

Sealed proposals will be received until July 1 by the Committee on Property at the office of the Board of Education, Room 292, City Hall, Philadelphia, for heating and ventilating the Newton Girls' Grammar School in that city.

The Supervising Architect of the Treasury Department, Washington, D. C., has invited estimates for furnishing and installing a heating plant in the Post Office Building at Brunswick, Ga. Bids must be sent in before August 5.

Otto Eppstein, Hartford, Conn., is doing the plumbing work on four new houses which Nevels Brothers are erecting on Deerfield avenue in that city. P. E. Greene has the heating contract for two of the houses and George M. Couch for the other two.

Plans and specifications for the buildings for the Pittsburgh Valve & Fittings Company's plant at Barberton, Ohio, have been completed, and it is expected that the contracts will be let very shortly, as the promoters of the enterprise are anxious to hurry along the work. It is understood that the plant will consist of six buildings—an iron foundry, 60 x 300 feet; a casting department, 40 x 100 feet; an iron tapping department, 40 x 200 feet; a brass finishing department, 40 x 200 feet, and a buffing and nickel plating building, 40 x 200 feet, as well as three large storage buildings. The siding and spur tracks, from the Erie Railroad lines, through the company's property have been completed.

William T. Disley, Waterbury, Conn., has the contract for plumbing a new block for Mrs. Cornelia A. Buell. Mr. Disley is also doing the metal roofing work and plumbing on the large new factory for the Eagle Lock Company, at Terryville, Conn.

The Moline Heating & Construction Company, Moline, Ill., have secured the contract for the plumbing of the new Manufacturers' Hotel in that city.

The plumbing shop of George A. Wilson, 73 Essex street, Boston, Mass., was slightly damaged by fire on June 23.

E. F. Ziegler, Waterbury, Conn., has the contract for plumbing a block on Canal street for A. Russo. He also has in hand a number of other jobs of residence plumbing in Waterbury.

The McIntosh Hardware Company, Kalispell, Mont., have been awarded the contract for heating and plumbing the new County Court House and jail in that town, at their bid of $5370.

In *The Metal Worker* of June 21 an error was made in stating that W. M. Sardou attended the Steam Fitters' Convention as a representative of the Armstrong Stove Company of Baltimore, Md. Mr. Sardou attended the convention in his own interests.

The Bigelow Self Closing Faucet was exhibited at the plumbers' convention at Atlantic City last week by the Garnett Valve Company of 40 Dearborn street, Chicago, and a little pamphlet, entitled the "Faucet Problem Solved," enabled the plumber to study its features at leisure.

New Firms and Changes.

The William H. Curtin Mfg. Company of Brooklyn, N. Y., have been incorporated with a capital stock of $25,000 to manufacture Plumbing Supplies. The directors of the company are: William H. Curtin, Diedrich Wolf and G. F. Diack, Brooklyn.

The Victoria Acetylene Company of Auburn, Maine, have been incorporated with a capital of $200,000 for the manufacture and sale of machines and appliances for distributing light, heat and power. The president of the company is E. S. Larrabee, and the treasurer H. W. Oakes, both of Auburn, Maine.

Andrew R. McCallum and Fred. C. Cook of Abington, Mass., have formed a partnership for the manufacture of the Lightning Steam Heater, of which Mr. McCallum is the inventor.

The Clarksville Steam Heating Company, Clarksville, Tenn., have been incorporated by M. L. Rudolph, A. R. Gholson, C. C. Gerhart, H. M. Dunlop and E. C. Morrow.

The firm of J. E. Keyes & Co. of Little Rock, Ark., have been incorporated by J. E. Keyes, W. S. McDonald and J. M. Gowdy for the purpose of doing a general plumbing and gas fitting business.

Gould & Nolan, Bath, N. Y., have discontinued the branch plumbing store at Hammondsport, N. Y., which they have conducted there since 1896.

Charles W. Newman has bought the plumbing business of William H. Deisseroth at 257 Broadway, Newburgh, N. Y., and will continue it at the same location.

The T. A. Gillespie Company are erecting at Paterson, N. J., a new Pipe plant, the principal building of which measures 150 x 300 feet. They will manufacture the Ferguson Lock Joint Pipe, which first became prominent in the construction of the West Australia water system for supplying the Coolgardie gold fields. This Pipe is particularly applicable for high pressures and will be made in sizes from 20 inches in diameter up. It is expected that the new works will be in operation early in the fall.

The Steele & Robinson Company, Williamsport, Pa., have been incorporated under the laws of Pennsylvania. The company are erecting a plant for the manufacture of a full line of Steam and Hot Water Boilers and Radiators. Their foundry is 100 x 150 feet, and the machine shop 100 x 160 feet. The works are located alongside the track of the Pennsylvania Railroad, while the Reading Railroad is within a short distance. The officers of the company are: George P. Steele, president, and William J. Robinson, secretary and treasurer. The concern have an office at 631 Arch street, Philadelphia.

The Montross Metal Shingle Company, Camden, N. J., refer to their present output of Metal Shingles and Tiles as the largest since they started in business. Owing to the increased demand new machinery has recently been added to the plant. Among orders lately received have been many from foreign countries, including Africa, South America, New Zealand, Mexico and others.

THE LETTER BOX.

Inquiries in regard to practical questions of general interest are invited, in reply to which we shall be glad to receive suggestions and information from our readers.

Correspondents are requested in all cases to give their names and addresses, which will not, however, be published or disclosed without their consent.

DESIGNING HAMMERED ROSETTES.

From M. W., Brooklyn, N. Y.—I have an order to make about 200 rosettes which I wish to raise out of scrap galvanized iron. Please let me know how to get the pattern for a rosette having eight scallops, to be 4 inches in diameter and raised 1½ inches deep, as shown by the inclosed sketch. What size of raising hammer should be used and how many can be raised at one time? Can you tell me how to make a drawing showing the correct appearance of the rosette as viewed from the side, and how to develop the pattern from this?

Answer.—It is generally understood among workers in this line that accurate patterns for work requiring much hammering cannot be cut, since the stretching of the metal in the process of raising may be more or less, according to circumstances, and the necessary amount of allowance can only be determined by experiment. But while this is true, it is not a difficult matter to construct, from given data, correct front and side elevations of any design which will show how it will look when finished. Such drawings will aid materially in determining whether the design as previously conceived will be satisfactory or whether some alteration must be made before going ahead with the work. Furthermore, with accurate drawings of the completed design at hand, from which definite measurements can be made, the workman can make such allowances for the stretching or drawing in of the metal as will enable him to lay out a fairly accurate blank. And with such an approximation to start with (inasmuch as our correspondent has a large number to make) one or two experiments in raising should enable him to produce a very accurate blank.

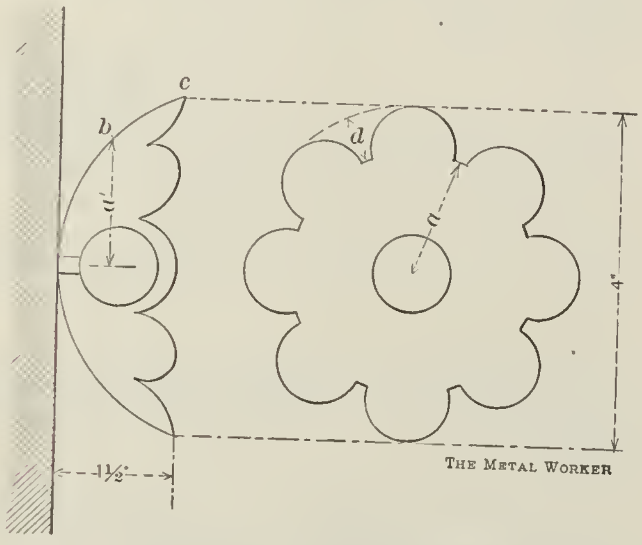


Fig. 1.—Reproduction of Sketch Submitted by "M. W."

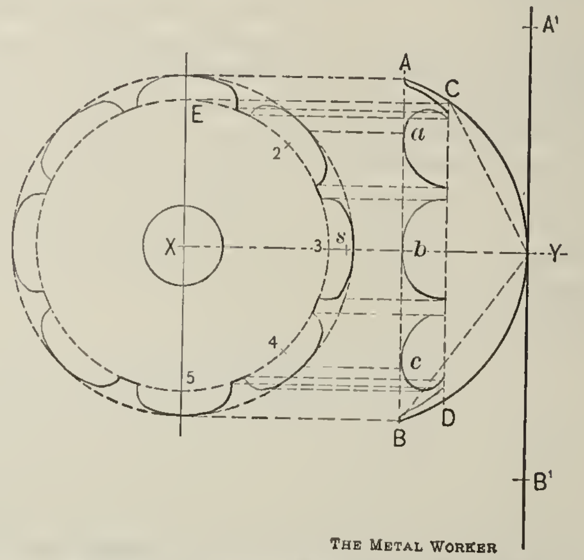


Fig. 2.—Method of Constructing Correct Front and Side Elevations of Hammered Rosette.

DESIGNING HAMMERED ROSETTES.

Fig. 1 of the annexed drawings is an approximate reproduction of our correspondent's sketch, in which we infer that the scallops are drawn about as he expects to see them "in the flat," or before the metal is raised or dished to the curve shown in the sectional view at the left. Inasmuch as corresponding points in the two views must be at the same hight or distance from the center of the design, it will be seen that, if the scallops as drawn were accepted as the correct front elevation, the distance of its deepest part from the center, shown by *a*, would if set off in the profile, show that point to be at *b*, and the depth of the scallop to be *b c*. This distance is much greater than its width, on account of the obliquity of the metal at the edge, and would produce a scallop of oval shape, which we do not think is intended.

In Fig. 2 we show a front and a side elevation of the rosette with a scallop of the approximate size of that shown in Fig. 1, which may be drawn in the following manner: First draw a circle showing the extreme size (4 inches) of the rosette: and, with its centers on the same horizontal line, draw the profile of the side view to correspond with that of Fig. 1, terminating it at A and B by horizontal lines projected from the top and bottom of the elevation. From A set off the depth of the scallop, as measured at *d* of Fig. 1, and shown by C of Fig. 2, and draw the vertical line C D. Next project a line from C to the center line of the front view, as shown by C E, and with the radius X E draw the dotted circle shown. Divide this circle into as many spaces as the number of scallops required (eight), locating the points 2, 3, 4, &c. From each of these points set off half the width of a scallop each way and draw its outline tangent at the middle to the outer circle, as shown. To complete the side view first project lines from the middle point of each scallop or point of tangency just mentioned to intersect with the line A B, as shown at *a*, *b* and *c*, and from the two inner points of each scallop on the circle E 5 project lines cutting the line C D of the side view, as shown by dotted lines. From the points thus obtained the outlines of the scallops may be drawn through the points just obtained on A B, as shown.

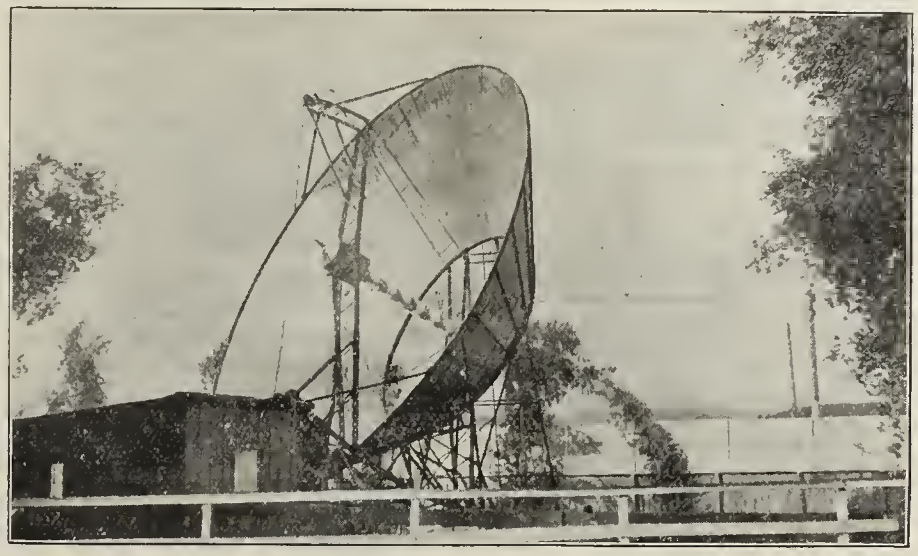
Since the surface at the edges of the rosette is oblique to the plane of the view, the outlines of the scallops, though intended to be circular, must appear elliptical, because the oblique projection of a circle is an ellipse. The ellipses are more flattened in the front view than they are in the side, because the angle of the metal is more oblique to the plane of that view than to that of the side view. The correctly drawn elevation now shows that the circle forming the bases of the scallops is much greater in diameter than the corresponding circle of Fig. 1, whose radius is *a*, and that therefore the scallops must either be larger or be further apart than shown in Fig. 1.

With reference to a pattern for a blank, it will now be seen that a full stretchout of the profile A Y B would, if set off on the vertical line, reach from A¹ to B¹, giving a diameter of nearly 5½ inches. This distance must of course be reduced by the amount which, in the judgment of the workman, the metal will stretch with the hammering necessary to produce the curve of the profile. A radius equal to the chord of A Y or B Y would be a safe estimate for a blank upon which a circle whose radius is somewhat less than the chord C Y may be drawn as the base of the scallops. These dimensions will, of course, have to be verified by experiment, as explained above. Unless it is desirable to cut the scallops before raising, they can most easily be outlined upon the dished blank by a carefully trimmed template or pattern.

Two or three blanks may be raised at one time during the first part of the operation, provided sufficient metal be left on the blank outside the outline at three or four points to permit notching and the turning under of some points or lugs to bind the several pieces together while being hammered. Each piece must, however, be finished separately to insure uniformity of size. A raising hammer weighing from 2 to 2½ pounds will be best adapted to the work.

PAINT FOR ROOFING.

From G. B., Iowa.—In regard to the query of "W. E. J." of June 14, I would say that I think any mineral paint mixed not too thin with linseed oil, and applied in two or three coats, makes about as good a paint for tin roofing and valleys as can be got. I have seen Venetian red adhere so firmly to a tin roof that it could hardly be scraped off; it seemed as if coated with a layer of stone. I would like to hear the opinion of others on this subject, however.



A Solar Motor.

A QUESTION OF WATER PRESSURE.

From S. J. H., Warren, Minn.—Will you please inform me through the columns of *The Metal Worker* what is the difference of pressure, if any, of water thrown by a fire engine at the time of leaving the engine and at the nozzle when using, say, from 200 to 500 feet of hose?

Answer.—The friction in long lines of hose is very considerable and is one of the great drawbacks in fighting fires through many lengths of hose. With the standard size of hose, to maintain a ⅞-inch nozzle jet of 100 feet in hight, which would require 60 pounds pressure if thrown from the engine, would require 65 pounds at the end of 50 feet, 69 pounds at 100 feet, 75 pounds at 200 feet, 89 pounds at 400 feet and 97 pounds at 500 feet of rubber lined hose. With a ¾-inch nozzle the difference will be less, about in proportion to the difference in the area of the nozzles, or, say, 36 per cent. With less engine pressure than 60 pounds the difference in pressure at the ends of the hose will also be proportionately less than above stated.

A Solar Motor.

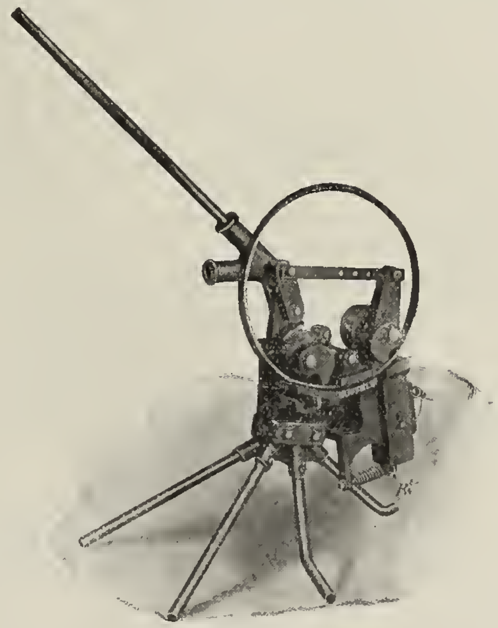
In a recent issue of this paper appeared an article on the solar motor in operation at an ostrich farm in South Pasadena, Cal. Through the courtesy of Hill, Clarke & Co. of Chicago we are enabled to present herewith a picture of this interesting machine which appeared in *Shop Talk* for May, with the following comments:

The resemblance to a huge umbrella is quite striking, with the boiler in the center taking the place of the somewhat sawed off stick. The rings of light reflected from the 1788 mirrors upon the boiler are quite plainly discernible. All day, every day, from an hour after sunrise to half an hour before sunset, this automatic servant turns its face toward the bright California sun and quenches the parched thirst of the dry soil with cooling streams of water.

It is thought probable that solar motors will some time be as common on all arid plains and scorched deserts as wind mills are in Holland to-day. Under the desert sand there are often great water reservoirs which only need tapping to enable the desert to be converted into fertile pasture land. In California and Arizona alone there are millions of acres awaiting such redemption.

Buffalo Tire Upsetter.

The Buffalo Forge Company, Buffalo, N. Y., to whom the progress and advancement in blacksmith machinery is largely due, have recently placed on the market their new Buffalo tire upsetter, an illustration of which is given herewith. This tool, after extensive and thorough experiments, has demonstrated itself to be a very practical and efficient device. The central presser foot holds the tire rigidly in place, and effectually prevents all possibility of kinking of the tire during the process of shrinking. The clamps have corrugated jaws. The corrugations and the bed on which the tire rests are of the best chilled metal, and grip the tire with great power and tenacity. By means of the long handle, as shown in the accompanying illustration, ample leverage may be obtained. By a simple arrangement, three adjustments are provided to accommodate the upsetting of various sized tires. Another valuable feature of this machine is the spring attachment of the outer lower jaw. This spring, as soon as the pressure is removed, immediately draws the lower jaw back into place, releasing the tire. The base is of the spider leg arrangement, which affords a rigid and strong means of support. The prime points of merit of this tool are its adaptability, simplicity of construction and high power, so combined as to readily accomplish any work required of it.



Buffalo Tire Upsetter.

TRADE REPORT.

MARKET SUMMARY.

Pig Tin is weak and about ½c. lower.

Copper is dull and weak.

Pig Lead continues quiet and steady.

Spelter continues very strong for spot and in fair demand.

Antimony is about ¼c. higher.

Nickel is in good demand and without change in price.

Aluminum is firm and in good demand.

Tin Plates are quiet, with prices unchanged.

Black Sheets are firm and in good demand in the heavy gauges.

Galvanized Sheets are rather dull and not so strong as Black.

Scrap Iron is active and firm.

Scrap Brass and Copper are dull and weak.

Foundry Iron gets scarcer daily, with prices high and rising.

Sheet Copper is in good demand at unchanged prices.

Sheet Zinc has been advanced ½c. per lb.

Hardware is not so active, but the volume of business is large and prices are firm.

Plumbers' Brass Work is about 2½ per cent. higher.

Roofing Slates are scarce, and from 50 to 75 cents per square higher in price.

Refrigerators are in heavy demand; prices are expected to be higher next season.

Hot Air Registers are firmer in price.

Wire Nails are firm and in good demand.

Cut Nails are unchanged.

White Lead in Oil is more active, and prices are firm.

Spirits Turpentine is quiet and firm.

METAL MARKET.

New York, June 27, 1902.

Pig Tin.—The market for Pig Tin has been a fluctuating one throughout the entire week, and the tendency of prices has been toward a lower level. At the end of last week prices were forced up to the highest point, but a reaction set in on Monday, since which date, after some feeble rallies, the market each time has settled back a little lower. Buying has been on a very light scale and the market closed dull with an easy tone. Jobbers' prices rule about ½ cent lower than a week ago, Straits Pig in small lots being quoted at 29½c. to 30c. per lb.

Copper.—The market for Copper has been very weak and wholesale prices have declined. The demand for consumptive needs was very quiet. Speculative trading, however, was quite active and some heavy business in that line was transacted. The market closed dull and easy. Jobbers quote Lake Ingot in small lots at about 13c. per lb., and Casting Copper at 12¾c.

Sheet Copper.—The demand for Sheet Copper keeps up in fairly large volume, but the volume of orders is scarcely as heavy as it was in the early part of the month. Prices continue firm on the basis of 18c. per lb. from store.

Pig Lead.—There is no change to be noted in this market, which remains quiet but steady, with prices continuing on the level held for some time past. American Pig, in small lots, is quoted at 4.45c. to 4½c. per lb. St. Louis advices report a dull market for Pig Lead, with the price-list showing little or no variation during the week.

Spelter.—This metal continues very firm, with a fair amount of business doing. The Spelter supply is still quite limited and prices are on the up grade. Jobbers are quoting 5¼c. to 5½c. per lb. for small lots of good Western Spelter. St. Louis advices report the continuance of unsettled conditions in the Spelter market there, with transactions very much restricted and prices strong.

Sheet Zinc.—The manufacturers of Sheet Zinc on June 25 announced an advance of ½c. per lb., making 6¾c. per lb. for 600-lb. lots, and from 7¼c. to 7½c. for smaller quantities. The demand for Sheet Zinc is of average proportions.

Antimony.—This metal is firmer, owing to a sharp advance in London. Cookson's is quoted at 10½c. to 11c. per lb. in small lots, Hallett's at 8⅞c. to 9c., and U. S. at 8½c. to 8⅝c.

Nickel.—There is no change in the market for this metal. Small lots are quoted at about 55c. per lb.

Aluminum.—The demand continues active, and prices are without change. Small lots of No. 1 Ingot, guaranteed 99 per cent. pure, are quoted at 37c. per lb., and 100-lb. lots at 35c.

Tin Plates.—The market for Tin Plates continues dull and uninteresting, without change of any description. Only a small amount of business for present delivery is noted, and but little in the way of contracts for future delivery. Prices remain steady, and the supply is of fairly good proportions. American Bessemer Coke Plates, IC, 14 x 20, in moderate sized lots, delivered at New York or corresponding points, are quoted by jobbers at $4.75 to $4.90 per box.

Sheets.—A slightly better demand for Black Sheets is reported, but Galvanized are rather dull, and it is said that prices on the latter have eased off slightly in some quarters. They continue firm, however, in the New York market. So much new capacity in Sheets is coming into the market and the output is now so large that any let up in the demand would probably be followed by weaker prices. The shortage of fuel and other material, however, is likely to cause some hindrance to a full output, which may counteract any tendency toward a lower level of prices in the general market. Heavy Sheets are relatively much more active than Light Sheets. Jobbers quote No. 27 One Pass Cold Rolled Soft Steel Sheets at about 3.75c. to 3.80c. per lb., and No. 24 Galvanized at 4c. to 4.20c.

Chicago advices are as follows: The market for Heavy Sheets has remained firm, with full prices readily obtained, but Light Sheets have been slow and barely steady, Galvanized Sheets being especially quiet. No. 27 Black Sheets in small lots from store are quoted at 3.45c. to 3.55c. Galvanized Sheets, net prices, in small lots from store rule at 4.70c. to 4.75c. for No. 27.

Old Metals.—The demand for Scrap Iron is active and prices firm, but other Old Metals are dull, and, in some cases, weak and lower, as, for instance, Scrap Brass and Copper. Dealers are paying about the following rates for moderate sized lots, delivered at New York or corresponding points:

Heavy Copper	per lb.	10 c.
Light and Tinned Copper	per lb.	9 c.
Heavy Brass	per lb.	8 c.
Light Brass	per lb.	6½c.
Lead	per lb.	3⅝c.
Tea Lead	per lb.	3 c.
Zinc	per lb.	2⅞c.
Pure Aluminum Sheet	per lb.	22 c.
Cast Aluminum	per lb.	17 c.
No. 1 Pewter	per lb.	18 c.
No. 2 Pewter	per lb.	9 c.
Tin Plate Scrap, per gross ton		.... to $5.00
Wrought Iron Scrap, per gross ton		$13.00 to 13.50
Heavy Cast Scrap, per gross ton		12.00 to 12.50
Stove Plate Scrap, per gross ton		8.50 to 9.00
Burnt Iron, per gross ton		7.00 to 7.25

The H. Haller Mfg. Company of New Orleans, La., manufacturers of Tinware and Stamped Goods, have disposed of their factory and business to the National Enameling & Stamping Company. It is stated that the New Orleans factory will be used mainly for the manufacture of Tinware for the West Indian and Central and South American markets.

THE PIG IRON MARKET.

New York.—The only business which is transpiring in this market is for small lots for prompt delivery, which continue exceedingly scarce and command high prices. Quotations for summer delivery are as follows: Northern Iron, at tidewater, No. 1 X, $23.50 to $25; No. 2 X, $22.50 to $23.50; No. 2 Plain, $21.50 to $22. Tennessee and Alabama brands are quoted as follows: No. 1 Foundry, $22.50 to $23.50; No. 2 Foundry, $21.75 to $22.50; No. 3 Foundry, $21 to $21.25.

Chicago.—Further buying for 1903 delivery has been the prominent feature of the market during the week, about 20,000 tons in the aggregate having been sold for delivery during the first six months of next year. Individual transactions, however, have not been large. Stove founders and general foundrymen have been among the buyers, but as a rule the large buyers are still indisposed to contract largely for next year. A little Southern Iron has been sold on the basis of $17.50 to $18, Birmingham, on No. 2 Foundry. Both Northern and Southern furnaces show some disposition to sell for next year, and if any change is apparent it is a somewhat easier undertone. For the latter half of this year, however, the market is as strong as ever. Local Iron is still tending upward, especially No. 2, which is 50c. per ton higher at the close. Spot Iron is even more difficult to obtain. There is some urgency in the demand from founders in this section. For immediate delivery prices are still irregular, sales being made, as a rule, at 50c. to $1 per ton above quotations, and in some instances even higher prices are obtained. We quote as follows:

Lake Superior Charcoal	$24.00 to $25.00
Local Coke Foundry, No. 1	22.00 to 22.50
Local Coke Foundry, No. 2	21.50 to 22.00
Local Coke Foundry, No. 3	21.00 to 21.50
Local Scotch, No. 1	22.00 to 23.00
Ohio Strong Softeners, No. 1	24.00 to 24.50
Southern Silvery, according to Silicon	22.65 to 24.65
Southern Coke, No. 1	22.15 to 22.65
Southern Coke, No. 2	21.65 to 22.15
Southern Coke, No. 3	21.15 to 21.65
Southern Coke, No. 1 Soft	22.15 to 22.65
Southern Coke, No. 2 Soft	21.65 to 22.15

Philadelphia.—Quotations on Pig Iron are very erratic, circumstances in each case determining what price the seller will name. No large lots can be had at any price for July or August delivery, but for carload lots —50 to 100 tons—$23 for No. 2 X Foundry, and $22 to $22.50 for No. 2 Plain are the figures demanded, and in some cases still higher prices have been obtained. The last quarter of the year is also very closely sold up to; $22 to $22.50 for No. 2 X is as low as sellers are inclined to quote. A very considerable business has been done for deliveries during the first half of next year at $21.50 to $22 for No. 2 X. Fair average prices for city and nearby points or deliveries during the last half of the year are as follows, July, August and September deliveries being from $1 to $2 higher:

No. 1 X Foundry	$23.00 to $23.50
No. 2 X Foundry	22.00 to 22.50
No. 2 Plain	21.50 to 22.00

Pittsburgh.—While the Pig Iron market is somewhat quiet so far as sales are concerned, prices are very strong, and there is more difficulty than ever in getting deliveries. The greater part of the product of the furnaces for the balance of this year is under control, and there is very little Iron to be had. The market on No. 2 Foundry for shipment within the next three months is all of $22.50 to $22.75, Pittsburgh.

Cincinnati.—The general situation in Pig Iron, so far as immediate delivery is concerned, is unchanged. Iron for delivery between now and January is still very scarce. The present supply is limited to odd lots, which come from unexpected sources, and are bringing almost anything sellers are inclined to ask. It is not believed that there is any Iron to be had for any delivery this year on a lower basis than $18.50, Birmingham, for No. 2 Foundry, and the majority of sellers are holding to $19. We quote, f.o.b. Cincinnati, for 1902 delivery as follows:

Southern Coke, No. 1	$21.75 to $22.25
Southern Coke, No. 2	21.25 to 21.75
Southern Coke, No. 3	20.75 to 21.25
Southern Coke, No. 4	20.25 to 20.75
Southern Coke, No. 1 Soft	21.75 to 22.25
Southern Coke, No. 2 Soft	21.25 to 21.75
Ohio Silvery, No. 1	24.10 to 24.35
Ohio Silvery, No. 2	23.60 to 24.10
Lake Superior Coke, No. 1	24.60 to 25.10
Lake Superior Coke, No. 2	24.10 to 24.60
Lake Superior Coke, No. 3	23.60 to 24.10

St. Louis.—No new features are noted in the Pig Iron market at this point. The matter of price is rather a difficult problem to determine. Actual transactions are very light and any lots of Iron for quick delivery that can be offered are snapped up at the sellers' own terms. A distinctly hardening tendency is noticeable and any further developments in the Coke situation affecting the Virginia supply will, it is feared, bring about an acute stage in the market. The following is the range of prices for cash, f.o.b. St. Louis:

Southern, No. 1 Foundry	$20.50 to $23.25
Southern, No. 2 Foundry	19.75 to 22.50
Southern, No. 3 Foundry	19.25 to ....
Southern, No. 4 Foundry	18.75 to 21.50
No. 1 Soft	20.25 to 23.00
No. 2 Soft	19.75 to 22.50

CHICAGO REPORT.

Scrap Iron and Steel.—The market is firmer in tone, with a good demand and moderate offerings. Malleable Scrap is especially scarce and commands higher prices, but other kinds are without essential change. We quote dealers' prices for carload lots, Chicago delivery, as follows:

	Per net ton.
Country Wrought Scrap	$14.00 to $14.50
Machinery Cast	.... to 13.00
Malleable Cast	12.00 to 13.00
Stove Plate (free from burnt)	.... to 9.50
Burnt Iron and Grate Bars	8.00 to 9.00
Sheet Iron and Hoops	8.00 to 9.00
Plow Steel	12.00 to 13.00
Breaking Stock	.... to 11.00
Old Boilers—whole (Iron)	9.50 to 10.00
Old Boilers (Iron) cut in single Sheets and Rings	12.00 to 12.50
Old Gas Pipes and Boiler Tubes	12.00 to 12.50
Cast Borings	8.50 to 9.00
Turnings	12.00 to 12.50
Horseshoes	14.00 to 14.50

Old Metals.—A weaker tone has been developed, and while offerings are not large they are more than ample to meet the decreased demand. Prices of Copper and Light Brass are lower. Other kinds are quiet but steady. The following prices are being paid by dealers in this market:

	Per lb.
Copper Wire and Heavy	10¾c.
Copper Bottoms	9¾c.
Copper Clips	10½c.
Red Brass	11 c.
Yellow Brass	8¼c.
Red Brass Borings	10 c.
Yellow Brass Borings	7½c.
Light Brass	6¾c.
Pipe Lead	3.70c.
Tea Lead	3.35c.
Zinc	3⅛c.
Tin Foil	22 c.
Pewter, No. 1	19 c.
Pewter, No. 2	11 c.
Aluminum	20 c.

Old Rubber.—The offerings to dealers have been less liberal, but the outlet has not improved, and the market has remained steady at previous prices. The following are the prices paid by dealers in this market:

	Per net ton.	Per lb.
Garden Hose	$25.00	.....
Air Brake Hose	42.00	.....
Rubber Shoes	....	7 c.
Rubber Car Springs	....	5 c.
Inside Bicycle Tubing	....	22 c.
Outside Tubing	....	6 c.
Black Rubber	....	4 c.
White Rubber	....	8½c.

Rags.—The market has been well supplied and an easy tone has prevailed, but dealers have continued to buy desirable offerings at 70c. to 75c. per 100 lbs., Chicago delivered.

Anthracite Coal.—There is a scarcity of the smaller sizes, and with a good demand and no improvement in the outlook at the mines, the market has continued strong. There has been a fair movement on contracts and prices have remained strong at the previous schedule, subject to a discount of 30c. per ton for shipments made during the month of June:

	Grate.	Egg and Stove.
Chicago	$5.75	$6.00
Milwaukee, Wis.	5.75	6.00
St. Louis	6.20	6.45
Kansas City, Mo	8.25	8.50

The Detroit Brass Works of Detroit, Mich., have bought ¾ acre of ground adjoining their plant, which they will use for an extension to their factory.

THE HARDWARE TRADE.

The attention of the trade is divided now between matters connected with the closing up of the half year's business, the entrance on the vacation season and plans for the remaining months of the year. Notwithstanding the natural effect of the coming of one of the dullest months of the year we have to report a very satisfactory condition of business, with a liberal placing of orders for future requirements. There has, indeed, been within the past week an increase in the volume of current trade, as the larger houses are at the present time apparently placing a good many orders with the manufacturers and endeavoring to secure a prompt and sufficient supply of goods for fall sales. The tenor of reports from the principal centers is very satisfactory. The general trade feeling is certainly confident, and anticipations are freely expressed of a large and profitable fall business unless something unexpected occurs to interfere with the present excellent outlook. Manufacturers, as a rule, are full of orders, and most of the factories find difficulty in making shipments with even reasonable promptness. The tone of the market in the matter of prices is steady, and in some lines strong. There are only occasional indications that some parties have been ordering goods in excess of their requirements, apparently apprehensive that they might experience difficulty in having them executed, and in some cases they are asking that shipment be deferred. The changes in price are few, and, for the most part, in heavy goods which lie near the raw material. The export of hardware and related products is somewhat affected by high prices ruling, and somewhat diminished quantities are going abroad.

NOTES ON PRICES.

Plumbers' Brass Work.—Under date of June 23 the members of the Association of Manufacturers of Plumbers' Brass Work withdrew all quotations on Plumbers' Brass Work. A meeting of the association was held at the Cataract Hotel, Niagara Falls, on June 25, at which an advance in prices was advocated by the Western members of the association. The condition of the Brass market in the East is such that the Eastern members were not in sympathy with the movement to advance prices, and as a consequence the meeting was continued on the 26th. It is understood that a slight advance in prices was agreed upon, and that Flange and Thimble Competition Work was restored to the list. For some time past this class of work has not been quoted on by the association, as many concerns who have been making a specialty of this line alone were not members of the association. Several of the outside concerns have stopped manufacturing Flange and Thimble Work, owing to the lack of demand, which was brought about through the dulness of trade in the metropolitan district, where the majority of this class of work is used. In consequence of the withdrawal of the outside concerns from the market new prices will be announced, and this line will be again restored to the list of goods quoted on by the association.

Enameled Iron Bathtubs.—It was stated this week that a movement is on foot to interest the independent manufacturers of Cast Iron Enameled Goods. It is said to be the intention of the promoters of the scheme to interest all those who are outside of the leading manufacturing concern, in forming an organization which would be of mutual benefit to all concerned, the purposes of which are to enable the members to obtain better prices for their products, to correct many abuses which now exist in this line of business, and to set a uniform guarantee which shall be used by all the manufacturers of Enameled Iron Goods. Several prominent Western manufacturers of Enameled Iron Goods are said to be agitating the movement, and if a sufficient number of manufacturers think favorably of the project, a meeting is likely to be called at some point which will be within easy access to the greater number of those interested.

Fall Goods.—A considerable increase is reported in the placing of orders for fall delivery of such goods as Stove Boards, Elbows, Coal Hods, Lanterns, &c. Prices on all these lines appear to be very firm and a heavy business is anticipated.

Refrigerators.—The season's demand for Refrigerators is referred to as unusually large and the prices obtained have been generally remunerative. The manufacturers of Refrigerators are said to be considering an advance in the price of these goods for next year.

Hot Air Registers.—A firmer tone has been developed in the market for Hot Air Registers and Ventilators, owing to the active demand and the high cost of iron. Some of the manufacturers who have been making relatively low prices on these goods are now said to be naming stiffer figures. The general market for Registers in the East is firmer and the tendency of prices throughout the trade is decidedly upward.

Wire Doors and Screens.—The demand for Wire Doors and Window Screens is still quite heavy, and the supply of these goods is short in some quarters, manufacturers not being able to get out their full product, owing to difficulty in getting enough supplies of Wire. Prices are very firm in this line.

The Southard-Robertson Company, 257-259 Water street, New York City, announce, under date of June 20, that owing to the increased cost of production in the manufacture of Stoves and Ranges they have been forced to withdraw all previous quotations, and that on and after the date named an advance of 5 per cent. will be charged on their line of Stoves, Ranges and Heaters.

Wire Nails.—The store demand for Wire Nails in New York continues active, owing to the large amount of building in the territory tributary to this point. Prices are unchanged, small lots from store being quoted at $2.30 per keg. Stocks of Nails are beginning to accumulate at the mills and a number of the mills will take advantage of this condition to close in July for the annual repair and clean up, which is required after a year's continuous operation.

Cut Nails.—Requirements for Cut Nails in the local market are about in the usual proportion to Wire Nails. The scarcity of Cut Nails continues in a modified degree, but less trouble is experienced than for some time in getting prompt shipments. Small lots of Cut Nails from store rule at $2.30 per keg.

White Lead.—There has been a better demand again for White Lead in Oil, stimulated by the cooler weather. Manufacturers are now looking forward to their fall trade, which they expect will be large. Prices are firm and without change. Small lots of White Lead in Oil from store being quoted at 6½ to 6¾ cents per pound.

Spirits Turpentine.—The price of Turpentine remains too high at this point to tempt the larger buyers, so that business is restricted to jobbing lots. Prices are firm, Turpentine in small lots being quoted at 50 to 50½ cents per gallon.

Roofing Slates.—In another column we present a review of the Roofing Slate market, showing the condition of strength that now prevails in it. Prices on all grades of Slates have been advanced from 50 to 75 cents per square in the past week or two, and there are indications of further advances in the near future, caused by a sharp scarcity in the present supply, with an indication of becoming still more pronounced as the season progresses, the demand for Roofing Slates being exceptionally heavy and the available stocks unusually light.

John A. Walker, vice-president and general manager of the Joseph Dixon Crucible Company, Jersey City, N. J., and 64 Reade street, New York, sailed for Europe on the "Kaiser Wilhelm der Grosse," June 17, for a six to eight weeks' tour of Europe. While he will get some pleasure from the trip, the principal purpose of it is to visit their London branch and the various Dixon agencies on the Continent.

A block of granite weighing over 2000 tons has been blasted in a Devonshire quarry by a single charge, consisting of 40 pounds of powder.

TRADE NOTES.

The American Galvanizing Works, 1243 Fillmore street, Chicago, have issued a pamphlet, tabulating the various sizes, lengths and quality of Galvanized Angles, equal legs; Angles, unequal legs; Round Back 60-Degree Angles, Galvanized Flat Bars, Galvanized Bands and Scrolls, Galvanized Round Bars and Channels, used especially in the manufacture of Wind Mills and Tank Towers.

The National Enameling & Stamping Company, New York City, have declared a quarterly dividend of 1¾ per cent. on the preferred stock and 1 per cent. on the common, payable July 1.

Work has been started on the large three-story factory building for the Eaton, Cole & Burnham Company on Main street, Bridgeport, Conn. The company are also about to put up a frame addition to their foundry.

The Waterbury Brass Company, Waterbury, Conn., are tearing down a number of old buildings preparatory to the erection of a large addition to their plant. The new building will be 150 x 200 feet, constructed of brick.

The Elkhart Brass Company of Elkhart, Ind., have been incorporated with a capital of $12,500 by Herbert E. Bucklen, William H. Anderson, Albert E. Hansen, Frederick A. Reed and Louis Anderson.

The Kirk-Latty Mfg. Company, Cleveland, Ohio, manufacturers of Bolts, Nuts, &c., advise us that they have purchased the manufacturing assets, tools, machinery, good will, &c., of the Metal Goods Mfg. Company of Cleveland, Ohio, and have taken up the manufacture of that company's line of children's All Steel Express Wagons, Velocipedes, Wheelbarrows, &c. The Kirk-Latty Company have just completed very extensive additions to their manufacturing plant more than doubling its capacity, and they believe that their reputation as one of the largest and most successful Bolt and Nut manufacturing concerns in the United States should assure the trade that their newly acquired line, above indicated, will be absolutely first class in quality, and that they will not only perpetuate the reputation always held by the Metal Goods Mfg. Company's line, but will improve upon the same where improvements are found possible.

The Noera Mfg. Company, Waterbury, Conn., have issued a new catalogue, No. 9, covering their line of Oilers, Torches, Lamps, Lawn Sprinklers, Water Filters, &c.

Rome Mfg. Company, Rome, N. Y., manufacturers of Nickel Plated and Polished Copper Specialties, have established a European agency in charge of William Cruger Cushman, 19 Chapel street, London, E. C.

The Canton Foundry & Machine Company, Canton, Ohio, have completed plans for a three-story 50 x 150 foot addition to their plant. Contracts will be closed at once.

The Wilke Mfg. Company of Anderson, Ind., are building a glass lined Refrigerator for the ocean going yacht of W. L. Mellon, Pittsburgh. This Refrigerator will be of solid mahogany exterior, completely lined with ½-inch plate glass; all hardware and trimmings will be of special design in polished lacquered brass.

More than $50,000 will be expended in enlarging the yards and plant of the National Enameling & Stamping Company at Granite City, Ill. Nearly an additional block will be taken in by the improvements.

The United States Consul-General at Coburg, Germany, reports that there is a good opening for American Refrigerators in that country, especially in the smaller and cheaper kinds. A couple of years ago a large New York house sent a quantity of Ice Boxes and Chests to the Leipzig fair, where they created a great interest. They sold well and the prospects of trade were excellent, but the manufacturers made the mistake of putting their goods into the hands of a firm in another city who understood nothing about the handling or use of Refrigerators. As a result no business was done.

A dispatch from Washington says that the expected increase in American exports to Africa has begun. Our exports to that country in April, the latest month for which details have been received by the Treasury Bureau, were greater than those to all South America and were more than 50 per cent. larger than the exports to Africa in April, 1901. For the ten months ending with April, 1902, they amounted in round numbers to $29,000,000, against $22,000,000 for the corresponding months of the fiscal year 1901, and $15,800,000 for the corresponding months of 1900. The chief increase is to British South Africa, and it is expected that the shipments of American goods to that part of the "Dark Continent" will show steady increases from month to month in the immediate future.

George Harbin of Youngstown, Ohio, has been appointed district vice-president of the Amalgamated Association to fill the vacancy caused by the recent resignation of John F. Ward.

C. B. Smith has succeeded J. H. Markel in the retail Hardware, Stove and Tinware business at Shrewsbury, Pa.

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ROOFING SUPPLIES, METALS, TIN PLATES, &c.

REVISED JUNE 27, 1902.

Aluminum—

No. 1 Aluminum (guaranteed over 99% Pure), in ingots for remelting.

Small lots	⅌ ℔, 37¢
100-℔ lots	⅌ ℔, 35¢

Aluminum Sheet, B. & S. gauge.
In lots of 50 ℔s or more.

Wider than	6-in	14-in.	24-in
And including	14-in	24-in.	30-in.
	⅌ ℔	⅌ ℔.	⅌ ℔.
Nos. 13 to 19	$0.42	$0.44	$0.47
" 20	.44	.46	.49
" 21 to 23	.46	.48	.51
" 24	.46	.50	.53
" 25	.47	.51	.54
" 26	.47	.54	.59
27	.48	.57	.62
28	.48	.57	.64
29	.49	.60	.69
" 30	.50	.64	.77

Note.—Lots of less than 50 ℔s 5¢ ⅌ ℔ extra.

Antimony—

Cookson	⅌ ℔. 10½@11 ¢
Hallett's	⅌ ℔, 8¾@9 ¢
U. S.	⅌ ℔ 8⅝@8¾¢

Brass, Roll and Sheet...... 30%

Conductors—
Corrugated.

Round or Square.—

Galvanized ½ or more. N'st'd	70&10%
" Not Nested	70&5%
" Plain Round, ½ or more, Nested	70&10%
Galvanized, Plain Round, Not Nested.	70&5%

Spiral Lock Seam Pipe—

Galvanized	60@60&10%

Spiral Riveted.

Galvanized	40%

See also *Elbows and Shoes; Eave Trough Miters; Strainers, Conductor.*

Conductor Strainers—

See *Strainers, Conductor*

Copper—

Lake Ingot	13 @13½¢
Casting	12¾@13 ¢
Sheet and Bolt	18¢ ⅌ ℔ basis
Cold Rolled Sheets	19¢ ⅌ ℔ basis
Cold Rolled and Polished Sheets	20¢ basis
Planished Sheets	21¢ basis
Bottoms, Pits and Flats	⅌ ℔ 22¢ basis

Eave Trough Galvanized

Territory.	L. C. L.
Eastern	75&10%
Central	75&7½%
Southern	70&12½%
S. Western	70&10%

Terms, 2% for cash.

Eave Trough Mitres—

Lap or Slip Joint	list, 25%

Elbows—Plain Adjustable—

Eastern List.

Tin	30%
Galvanized	30%
Perfect Elbows	40%

Stove Pipe—

Four-Piece

	4	4½	5	5½	6-inch.
No. 1.	$0.80	.85	.90	1.00	1.05 per doz.
No. 2.	.65	.70	.75	.80	.85 "
No. 3.	.60	.68	.65	.70	.80 "

Elbows and Shoes—

Galvanized	60%

Gasoline—

See *Petroleum Products.*

Iron Sheet—*Black.*

	One Pass, C. R. Soft Steel.	R. G. Cleaned.
Nos. 14 to 16	⅌ ℔. 3.40	3.45¢
Nos. 18 to 21	⅌ ℔. 3.50	3.55¢
Nos. 22 to 24	⅌ ℔. 3.60	3.65¢
Nos. 25 and 26	⅌ ℔ 3.70	3.75¢
No. 27	⅌ ℔. 3.80	3.85¢
No. 28	⅌ ℔. 3.90	3.95¢

Russia, Planished, &c.

Genuine Russia, according to assortment	⅌ ℔ 11@14 ¢
Do. Stained	6@10½¢
Patent Planished. ⅌ ℔ A. 11¢; B. 10¢ net	

Galvanized.

Nos. 14 and 16.	⅌ ℔ 3.45@3.60¢
Nos. 18 and 20.	⅌ ℔. 3.70@3.90¢
Nos. 22 and 24	⅌ ℔, 4.00@4.20¢
No. 26	⅌ ℔, 4.25@4.50¢
No. 27	⅌ ℔, 4.55@4.80¢
No. 28	⅌ ℔, 4.85@5.10¢
No. 30	⅌ ℔, 6.00@6.30¢

No. 20 and lighter, 36 inches wide, 25¢ higher.

Lead—

American Pig		4.45@4½¢
Bar		5@5½¢
Pipe	6½¢	20% off
Tin Lined Pipe	12½¢	20% off
Block Tin Pipe	42½¢	20% off
Sheet Lead	7¼¢	20% off

Old Lead in exchange, 3¼¢ ⅌ ℔.

Mitres Eave Trough—

See *Eave Trough Mitres.*

Nickel—

Per ℔	55@60¢

Paints Oils &c.—
Leads—

Lead, American White, in Oil;	
Lots of 500 ℔ or over	6¼ @ 6½
Lots less than 500 ℔	6½ @ 6¾
Lead, White, in oil, 25 ℔ tin pails, add to keg price	@ ½
Lead, White, in oil, 12½ ℔ tin pails, add to keg price	@ 1
Lead, White, in oil, 1 to 5 ℔ assorted tins, add to keg price	@ 1½
Lead, White, Dry in bbls.	5¾ @ 6
Lead, Red, bbls., ½ bbls. and kegs;	
Lots 500 ℔ or over	@ 6
Lots less than 500 ℔	@ 6½

Oils—

Linseed, City, raw	⅌ gal. 67@67½¢
Linseed, City, boiled	69@69½¢
Linseed State and West'n, raw	66@60½¢

Spirits Turpentine—

In Southern bbls.	50 @50½¢
In machine bbls	50¾@51¼¢

Putty—

In bulk	$1.25
In bladders	2.25
In cans 12 ℔ to 25 ℔	2.23
In cans 1 ℔ to 5 ℔	3.23

Petroleum Products—

In Barrels (Barrel Included)

Stove Gasoline	⅌ gal. 10½@11¢
Kerosene.	⅌ gal. 12@13¢

Pipe Drain...... 40%

Pipe, Spiral—

See *Conductors.*

Registers—

List Sept. 2, 1901.

Black Japanned	70%
White Japanned	70%
Nickel Plated	70%
Bronze Finishes in Imitation of Gold, Silver, Copper or Bronze	70%
Electroplated in Brass, Bronze or Copper	70%
White Porcelain	60%
Solid Brass and Bronze Metal	50%

Roofing Material—

1 Ply Tarred Paper.	⅌ ton. $31.00@32.00
2 Ply Tarred Paper	⅌ roll, 108 sq. ft. 55@60¢
3 Ply Tarred Paper	⅌ roll, 108 sq. ft. 80@85¢
Slater's Felt	⅌ ton, $35.00@36.00
Roofing Pitch	⅌ bbl. $3.50

Rosin—

Common and Good—Strained.

Rosin, C. & D.	⅌ bbl.	$1.62½	@$1.63
Rosin, E. & F.	⅌ bbl.	1.70	@ 1.75
Rosin, G. & H	⅌ bbl.	1.80	@ 1.85
Rosin, I. & K	⅌ bbl.	2.10	@ 2.70
Rosin, M. & N.	⅌ bbl.	3.05	@ 3.55

Shoes and Elbows—

See *Elbows and Shoes.*

Slate Roofing—

f. o. b. cars, Quarry Station.

	According to size.
Pennsylvania:	
Best Bangor, ⅌ sqr.	$3.75@$6.00
No. 1 Bangor Ribbon, ⅌ sq	3.50@ 3.75
Pen Argyle, ⅌ sqr.	3.50@ 4.50
Peach Bottom, ⅌ sqr.	5.25@ 6.35
No. 1 Chapman, ⅌ sqr.	3.75@ 4.75
No. 1 Penna. Black	$3.15@4.15
Unfading Washington Bangor	$3.00@4.50
Vermont:	
No. 1 Sea Green, ⅌ sqr.	$2.25@$3.50
Purple, ⅌ sqr.	4.50@ 5.00
Unfading Green, ⅌ sqr.	4.25@ 5.25
Red, ⅌ sqr	7.00@11.00
Maine:	
Brownville, Unfading Black. No. 1	$5.25@7.50

Solder—

½&½ guaranteed	20 @20½¢
No. 1	17½@19 ¢

Prices of Solder indicated by private brands vary according to composition.

Soldering Fluids—

	Per Pound. Barrels	Per Pound. Smaller Q'ntities
Concentrated Flux	4c	5c
Eureka Flux;		
Triple Strength	3c	3½c
Extra Concentrated	4½c	5c
Crystal		7c
Gedney's Fluid	2c	2c
Lennox Fluid	2c	3c
Perfection Flux	3c	3½@4c
Yager's Salts, 1 lb. bottles	each, 50¢	
5 lb. bottles, per lb., 45¢		

Soldering Coppers—

Per ℔	22@24¢

Spelter—

Western Spelter	5¼@5½¢

Spiral Pipe—

See *Conductors.*

Stove Pipe Elbows—

See *Elbows, Stove Pipe.*

Stove Trucks—

See *Trucks, Stove.*

Strainers Conductor—

Galvanized	50%

Tin Pigs and Bars—

Banca, pigs, ⅌ ℔	30 @31 ¢
Straits, pigs, ⅌ ℔	30 @31 ¢
Straits, in bars, ⅌ ℔	31 @32 ¢

Tin Plates American
Charcoal Plates, Bright—

N. B.—The price of 20 x 28 sizes is double the price of 14 x 20.

Calland Grade:		
1C,	14 x 20	$7.00
1X,	14 x 20	8.50
1XX,	14 x 20	9.75
IXXX,	14 x 20	11.00
IXXXX.	14 x 20	12.25
Melyn Grade:		
1C,	14 x 20	6.50
1X,	14 x 20	8.00
1XX,	14 x 20	9.25
IXXX,	14 x 20	10.50
IXXXX	14 x 20	11.75
Allaway Grade:		
1C,	14 x 20	6.00
1X,	14 x 20	7.10
1XX,	14 x 20	8.20
IXXX,	14 x 20	9.30
IXXXX,	14 x 20	10.40

Coke Plates, Bright—

Bessemer Steel, or equal to J. B. Grade, full weight	IC, 14 x 20	$4.90@5.00
" "	IX, 14 x 20	$6.00

N. B.—The reduction per box on lighter Plates than 1C, 14 x 20, is as follows:

100 ℔	15¢
95 ℔	20¢
90 ℔	25¢
85 ℔	30¢

Terne Plates—

N. B.—The following prices are for IC 20 x 28, the rate for 14 x 20 being half as much. 1X is usually held at $2 per box advance for 8 to 10 ℔ coating and $2.50 to $3 advance for 15 ℔ and upward.

About 40 ℔ coating	$16.00@16.50
About 30 ℔ coating	15.25@15.75
About 20 ℔ coating	13.25@13.75
About 15 ℔ coating	11.25@11.75
About 8 ℔ coating	@10.00

Boiler Plates, American—

IXX, 14 x 26..(112 sheets)	$12.50
IXX, 14 x 28..(112 sheets)	13.50
IXX, 14 x 31..(112 sheets)	15.00

Troughs Eave—

See *Eave Trough.*

Trucks, Stove—

Improved Lock Frame, per doz	$15.00
Steel Lock Frame, per doz	18.00
Daisy Improved pattern, ⅌ doz	18.00

Tubes and Tubing—

Brazed Brass, List June 6, 1898	40%
Copper and Bronze, 3c per lb. list more than Brass.	
Seamless Brass Tubes, net list Feb. 6, 1899	
Tin	50%
Galvanized	50%
Fittings for do	40%

Zinc—

600 ℔ casks ⅌ ℔	6¾¢
Per ℔	7¼@7½¢

PLUMBERS' AND STEAM FITTERS' SUPPLIES.

Boilers, Galvanized—

Standard Boilers:	
30 gal.	72½%
35 and 40 gal	70%
Other sizes up to 52 gal	65%
52 gal. and above	55&5%
Extra Heavy Boilers:	
18 to 52 gal	60%
52 gal. and above	50&5%

Brass Work, Plumbers'—

List of December 7, 1896.

Compression:	
Basin Cocks	65%
Bath Cocks and Double Bath Cocks	65%
Bibs	65%
Bibs, Flanged	65%
Fuller:	
Bibs	70%
Basin Cocks, Nos. 1 to 4	70%
Bath Cocks, No. 4½	$2.40 each net
Ground Key Work:	
Finished Bibs	55&5%
Rough Bibs	60%
Rough Stop and Stop and Waste Cocks	70@70&5%
Rough Stop and Stop and Waste Cocks, Patented	65@65&5%

Miscellaneous—

Basin Clamps	60@65%
Basin Plugs	60@65%
Chain Stays.	60&5@70%

Iron Boiler Couplings:

	Lead Pipe.	Iron Pipe.
Plain Face. ⅌ set	$0.95	$1.05
Ground Face ⅌ set	$1.00	$1.10

Sink or Bath and Wash Tray Plugs	60@65%
Soldering Nipples	70&5@75%
Soldering Unions	70&5@75%
Union Elbows, Hot Water Heating	75@75&15%

Cocks, Valves &c.—
Cocks—
Brass—

Air and Radiator Air	75@75&5%
Gas Meter and Union Meter	65@70%
Steam	65@70%

Iron—

All Iron	70@70&10%
Iron with Brass Plugs	65@70%

Valves—
Brass—

Check	65@70%
Garden Hose	65&10@70%
Gate	65@65&10%
Globe and Angle, hose outlet	65@65&10%
Globe, Angle and Cross	65&10@70&5%
Horizontal, Vertical and Angle Check	65@65&10%
Hot Water Radiator	75%
Radiator	70&10%
Safety	65%
Safety, Low Pressure	65%
Jenkins' Disc.	
Check	65%
Gate	65%
Globe, Angle and Cross	70%
Radiator	80%
Radiator, Corner	75%
Safety	65%

Iron—

Iron Body	70@70&5%
Foot	65@70%
Jenkins Bros.':	
All Iron, except Gate	40&5%
All Iron Gate	35@40%
Iron Body, except Gate	60%
Iron Body Gate	50@50&5%
Swing Check	50%

Earthenware—

Brown Glazed Wash Tubs	20%
Brown Glazed Sinks, Kitchen and Pantry	20%
Basins, Urinals and Hoppers	45%
Closet Bowls, Sundries, Washouts and Pedestals	50%

Fittings—
Brass Fittings—

Finished	70@75%
Rough	70@75%
Bushings	70@75%
Nipples	70@70&2½%
Unions, Rough and Finished	70@70&5%

Iron—

Cast Iron Fittings, Black and Galvanized, Standard sizes	65@70%
Cast Iron Bushings and Plugs	65@70%
Cast Iron Flanges	65@70%
Cast Iron Floor Flanges	65@70%
Malleable Iron Fittings (from ℔ list)	50%
" " Bushings	65@70%
" " Unions	65@70%
" " Unions, Flange	60&10@70%
" " Pipe Hangers, Universal	50%
Wrought Iron Nipples	65@70%
" " Couplings	60@65%
" " Long Screws	60@65%

Lavatories—

Porcelain Enameled Iron	30@30&10%

Oakum—

Plumbers' Oakum, 50 lb. bales, ⅌ ℔	8½¢

Pipe—
Brass, Iron Pipe Size—

⅛	¼	½	¾ to 3 Inch
$0.33	.31	.29	.28 ⅌ ℔

Cast Iron Soil—

List Feb. 25, 1901.
2 to 6 inch inclusive.

Standard	50&5%
Extra Heavy	60&7½%
All Fittings	65&10%

7 to 15 inch.

Pipe and Fittings, Standard and Extra Heavy	50%

Wrought Iron—

List Feb. 15, 1900.

	Black.	Galv
⅛ to ⅜ inch.	58%	46%
¾ to 12 inch.	65%	53%
Extra Heavy, Plain Ends.	50%	40%
Double Extra Heavy	20%	20%

Radiators—

Standard List.

Steam	50&2½%
Hot Water	50%

Sinks, Etc.— Cast Iron—

	Black.	Galv.
Sinks, Square, Half Round and Corner	60@65%	60@65%
Sink Legs.	60%	60@65%
Sink Backs	60%	60@65%
Boiler Stands, Cast Iron	50@10@60%	
Cesspools, Cast Iron	50%	

Wrought Steel Sinks—

New Era, Galv'd and Enameled.	70&5%
New Era, Painted	50&10%
L. & G.	50%

Traps—

Drawn Lead Traps, List June 3, 1901.	50&5%

Tubs, Bath—

List April 1, 1902.

Cast Iron Enameled Bath Tubs.	
Regular Patterns, Guaranteed	30%
All Special Patterns	15%
Solid Copper, list of Feb. 1, 1899	40%
Solid Porcelain—Class A, 30%; B, 40%; C, 50%.	
Steel Clad Copper Lined, list of Feb. 1, 1899	50@55%

ALPHABETICAL LIST OF ADVERTISERS.

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American Radiator Co ... 16
American Sheet Steel Co ... 1&76
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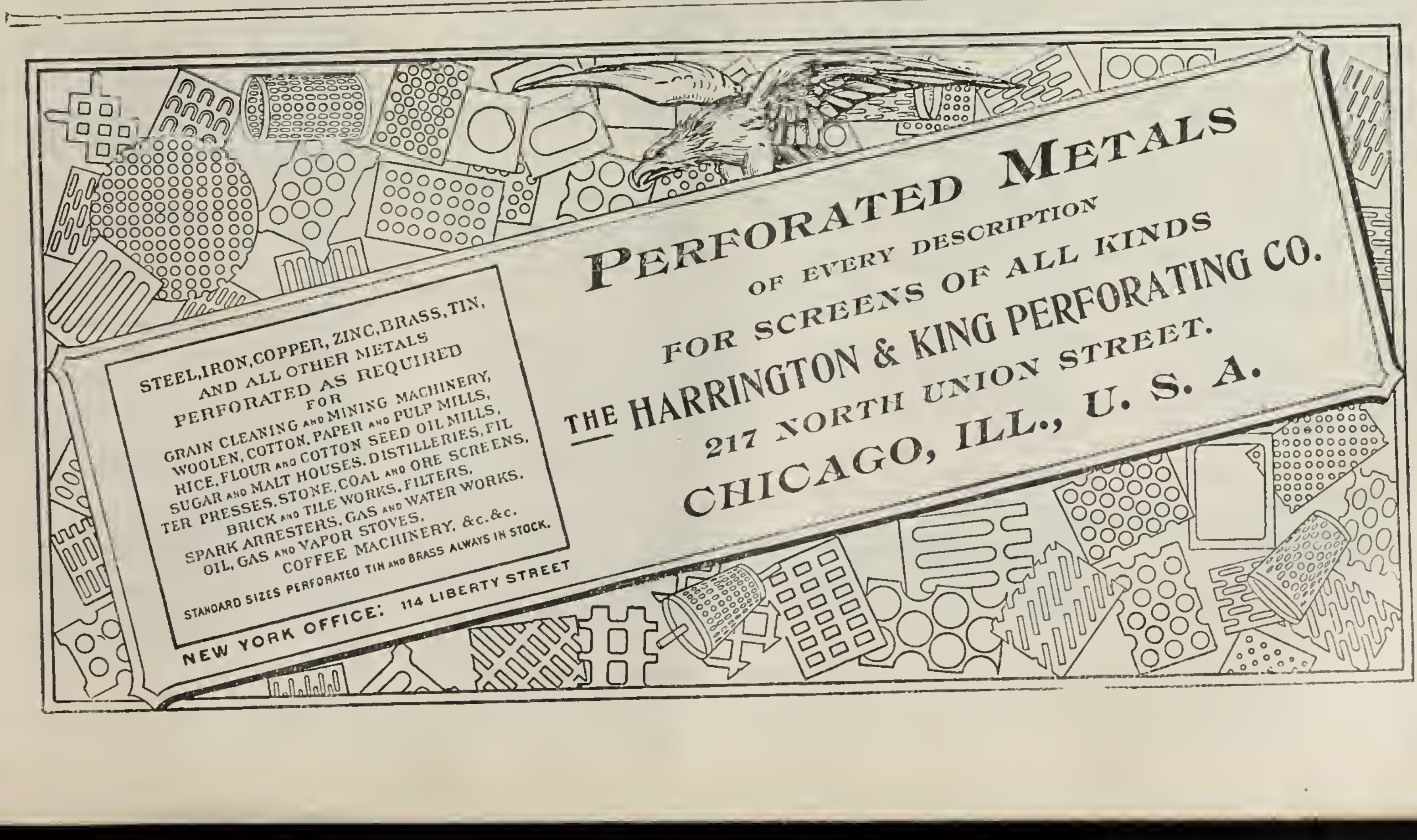

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American Sheet Steel Co., New York.
Bruce & Cook, 186 to 190 Water St., N. Y.
Coe, Jas. A. & Co., Newark, N. J.
Follansbee Bros. Co., Pittsburgh, Pa.
Gummey, McFarland & Co., Phila., Pa.
Osborn, J. M. & L. A., Cleveland, O.
Wood Co., Alan, Philadelphia, Pa.

Shingles and Tiles, Metallic.
Chattanooga Steel Roofing Co., Chattanooga, Tenn.
Cincinnati Stamping Co., Cincinnati, O.
Cortright Metal Roofing Co., Philadelphia, Pa.
Merchant & Co., Philadelphia, Pa.
Meurer Bros. Co., Brooklyn, N. Y.
Montross Metal Shingle Co., Camden, N. J.
Penn Metal Ceiling & Rfg. Co., Phila., Pa.

Shot.
Colwell Lead Co., 63 Centre St., N. Y.

Siding. (*See Roofing and Siding.*)

Sinks.
Lalance & Grosjean Mfg. Co., 19 Cliff St., New York.

Skylights.
Canton Steel Roofing Co., Canton, O.
Chattanooga Steel Roofing Co., Chattanooga, Tenn.
Drouve, G. Co., Bridgeport, Conn.
Galesburg Cornice Works, Galena, Ill.
Mullins, W. H., Salem, O.
Rasner & Dinger, Pittsburgh, Pa.

Slaters' Tools.
Galt, Jno. & Sons, 253 Broadway, N. Y.
Salem Nail Co., 279 Pearl St., N. Y.

Smoke Test Machine.
Gunster & Forsyth, Scranton, Pa.

Snow Guards.
Clason Arch. Metal Works, Providence, R. I.

Solder.
Bruce & Cook, 186 to 190 Water St., NY
Follansbee Bros. Co., Pittsburgh, Pa.
Gummey, McFarland & Co., Phila., Pa.
McClure & Co., Pittsburgh, Pa.
Meurer Bros. Co., Brooklyn, N. Y
Taylor, N. & G. Co., Philadelphia, Pa.

Soldering Furnaces.
Burgess Soldering Furnace Co., Columbus, Ohio.

Speaking Tubes and Whistles.
Ostrander, W. R. & Co., 22 Dey Street, N. Y.

Specialties, Sheet Metal.
Vogel, Wm. & Bros., Brooklyn, N. Y.

Statuary, Sheet Copper and Bronze.
Mullins, W. H., Salem, O.

Steam and Gas Fitters' Supplies.
Curtis & Curtis Co., Bridgeport, Conn.
Walworth Mfg. Co., Boston, Mass.

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Rutland Fire Clay Co., Rutland, Vt.

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Bridgeport Crucible Co., Bridgeport, Conn.
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McLeod & Henry Co., Troy, N. Y.
Marcy Stove Repair Co., 74 Beekman St., N. Y.
Presbrey Stove Lining Co., Taunton, Mass.
Rutland Fire Clay Co., Rutland, Vt.
Valentine, M. D. & Bro. Co., Woodbridge, N. J.
Williams Stove Lining Co., Taunton, Mass

Stove and Metal Polish.
Hoffman, Geo. W., Indianapolis, Ind.
Rutland Fire Clay Co., Rutland, Vt.

Stove Patterns.
Cope, G. W., Detroit, Mich.
Gobeille Pattern Co., Cleveland, O.
Milwaukee Pattern Works, Milwaukee, Wis.
Vedder Pattern Works, Troy, N. Y.

Stove Pipe.
Triumph Adjustable Stove Pipe Mfg. Co., Peoria, Ill.

Stove Pipe Thimbles.
City Forge & Iron Works, Dayton, O.

Stove Repairs.
Clark, Henry N. Co., Boston, Mass.
Heath, C. C. & Co., Phila., Pa.
Howes, S. M. Co., Boston, Mass.
Marcy Stove Repair Co., 74 Beekman St., N. Y.
Metropolis Sheet Metals & Stove Repairing Co., Newark, N. J.
Troy Nickel Works, Troy, N. Y.

Stove Trimmings, &c.
Fanner Mfg. Co., Cleveland, O.
Shields, W. H. & Co., Troy, N. Y.
Troy Nickel Works, Troy, N. Y.

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Howes, S. M. Co., Boston, Mass.
Tucker & Dorsey Mfg. Co., Indianapolis, Ind.

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Barstow Stove Co., Providence, R. I.
Beckwith, P. D., Est. of, Dowagiac, Mich.
Bergstrom Bros. & Co., Neenah, Wis.
Boynton Furnace Co., 207 Water Street, New York.
Brand Stove Co., Milwaukee, Wis.
Cosby, C. H., Richmond, Va.
Dighton Furnace Co., Taunton, Mass.
Floyd, Wells & Co., Royersford, Pa.
Fuller & Warren Co., Troy, N. Y.
Graff Furnace Co., 208 Water Street, New York.
Joliet Stove Works, Joliet, Ill.
Magee Furnace Co., Boston, Mass.
March-Brownback Stove Co., Pottstown, Pa.
Miller, Wm. Range & Furnace Co., Cincinnati, O.
Ohio Stove Co., Portsmouth, O.
Pittsburgh Stove & Range Co., Pittsburgh, Pa.
Rathbone, Sard & Co., Albany, N. Y.
Richmond Company, Norwich, Conn
Ringen Stove Co., St. Louis, Mo.
Schneider & Trenkamp Co., Cleveland, O.
Sheppard, Isaac A. & Co., Phila., Pa.
Smith & Anthony Co., Boston, Mass.
Somerset Stove Foundry Co., Somerset, Mass.
Stamford Foundry Co., Stamford, Ct.
Walker & Pratt Mfg. Co., Boston, Mass.
Weir Stove Co., Taunton, Mass
White, Warner Co., Taunton, Mass.
Willard, Wm. G., St. Louis, Mo.

Stoves and Ranges, Gas.
Dangler Stove & Mfg. Co., Cleveland, Ohio.
Dighton Furnace Co., Taunton, Mass.
Howes, S. M. Co., Boston, Mass.
Metropolis Sheet Metals & Stove Repairing Co., Newark, N. J.
Ringen Stove Co., St. Louis, Mo.
Standard Lighting Co., Cleveland, O.

Stoves and Ranges, Oil, Vapor and Gasoline.
Dangler Stove & Mfg. Co., Cleveland, Ohio.
Heath, C. C. & Co., Philadelphia, Pa.
Rathbone, Sard & Co., Albany, N. Y.
Ringen Stove Co., St. Louis, Mo.
Schneider & Trenkamp Co., Cleveland, O
Standard Lighting Co., Cleveland, O.
Taylor & Boggis Foundry Co., Cleveland, O.

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American Radiator Co., Chicago, Ill.

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Edwards, J. H., 59 Park Place, N. Y.

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American Tin Plate Co., New York.
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Bertsch & Co., Cambridge City, Ind.
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Bruce & Cook, 186 to 190 Water St., New York.
Follansbee Bros. Co., Pittsburgh, Pa.
Keene, Geo. O. & Co., Cincinnati, O.
Meurer Bros. Co., Brooklyn, N. Y.
Niagara Machine & Tool Wks., Buffalo, N. Y.
Ohl, Geo. A. & Co., Newark, N. J.
Peck, Stow & Wilcox Co., 27 Murray St., New York.
Stiles & Parker Press Co., Brooklyn, N. Y.
Weiss, H. & Co., 20 Cliff St., N. Y

Tinners' Trimmings.
Vogel, Wm. & Bros. Brooklyn, N. Y.

Tin Plate.
American Tin Plate Co., New York.
Bruce & Cook, 186 to 190 Water St., New York.
Coe, Jas. A. & Co., Newark, N. J.
Follansbee Bros. Co., Pittsburgh, Pa.
Gummey, McFarland & Co., Phila., Pa.
McClure & Co., Pittsburgh, Pa.
Merchant & Co., Philadelphia, Pa.
Meurer Bros. Co., Brooklyn, N. Y.
Osborn, J. M. & L. A., Cleveland, Ohio.
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Fenn, Geo. E., Boston, Mass.
Globe Ventilator Co., Troy, N. Y.
Kramer Bros., Dayton, O.
Merchant & Co., Philadelphia, Pa.
Meurer Bros. Co., Brooklyn, N. Y.
Washburne, E. G. & Co., 46 Cortlandt St., New York.

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Littleford Bros., Cincinnati, O.
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National Enameling & Stamping Co., 73 Beekman St., N. Y

Water Closets.
Adee, Fred. & Co., 90 Beekman St., N. Y.
Colwell Lead Co., 63 Centre St., N. Y.

Water Fronts.
Clark, Henry N. Co., Boston, Mass.

Water Heaters.
Adam, W. J., Joliet, Ill.
Kemp, C. M. Mfg. Co., Baltimore, Md.

Wind Gates.
Miner & Peck Mfg. Co., New Haven, Ct.

Window Frames, Metal.
Smith-Warren Co., Boston, Mass.

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THE METAL WORKER.

With which is Incorporated The Stove and Tin Trade Journal, The Sheet Metal Builder, and Metal.

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Notices under this heading of reasonable length are inserted free of charge. Only those relating to employment are admitted. Write distinctly on one side of paper only, and do not use postal cards.

Original letters of reference should not be inclosed with replies to advertisements appearing in these columns as they are frequently mislaid and lost. A copy of the reference will serve the purpose.

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Experienced SALESMAN, complete line of steel ranges, stoves, &c.; liberal commission. The Baldwin Stove Company, 859 Rose Building, Cleveland, Ohio. June 28

IRON WORKERS in a shop doing heavy sheet iron and structural work. "R. A. D.," care *The Metal Worker*, New York. June 28

FURNACEMAN and TINNER; good, first-class, all around man; must be sober, industrious and know his trade; steady employment the year round to the right man. Brock & Co., Lexington, Ky. June 28

At once, a first-class STOVE PATTERN FITTER; one who thoroughly understands his business; permanent position to the right man; state experience and wages wanted. Keystone Stove Foundry, Spring City, Pa. June 28

Three or four first-class CORNICE and SKYLIGHT WORKERS; wages, $3 per day of eight hours for first-class men. James Ackroyd & Sons, Albany, N. Y. June 28

A first-class PLUMBER, at once, with reference. W. H. Pettibone, 11 East Main street, Haddonfield, N. J. June 28

TINSMITHS; those having some experience in cornice work preferred. New Orleans Cornice Works, 619 Poydras street, New Orleans, La. June 28

A first-class PLUMBER; steady work to the right man; one of the best towns in Ohio; good wages. W. E. Frye, Marion, Ohio. June 28

A first-class, sober, honest and industrious PLUMBER; will give steady employment to the right man; wages, $2.50 per day. Lock Box 682, Lake Geneva, Wis. June 28

A first-class, all around TINNER; one who understands both bench and outside work; must be sober; steady work and good wages to right man. Walter Tilison, 14 N. Joachim street, Mobile, Ala. June 28

At once, a good, reliable TIN and SHEET METAL WORKER who understands something of furnace work and general job work; young married man preferred; wages, 25 cents per hour; beautiful little city of 7000 and living cheap; state age. O. Knisely & Son, New Philadelphia, Ohio. June 28

Several first-class LIGHT SHEET IRON MECHANICS acquainted with application to fan system of heating and ventilating for shop work and erecting. C. H. Clifford & Co., 135 North Third street, Philadelphia, Pa. June 28

Practical GALVANIZER in a galvanizing plant which has just been installed by a large and prosperous concern; we want a thoroughly experienced man and none other need apply. Box 63, care *The Metal Worker*, 1205 Fisher Building, Chicago, Ill. June 28

A good, steady, all around CORNICE MAKER who can cut his own patterns, sober and reliable, as working partner, to take charge of a small shop; lots of work and a good town. Waterloo Cornice Works, Waterloo, Iowa. June 28

A PLUMBER in the Pacific Coast States; one who is a thorough mechanic, sober and willing to do a good day's work; we pay $4.50 for eight hours' work; steady work for the right man. Box 64, care *The Metal Worker*, 1205 Fisher Building, Chicago, Ill June 28

CORNICE MAKERS, CUTTER and FOREMAN wanted; first-class man. Mail Box 395, Builders' Exchange, Chicago, Ill. June 28

A first-class PLUMBER who can do a good job of tin work; to a first-class man a steady job will be given at good wages; at once. Frank R. Jarrell, Lexington, Ky. June 28

A thorough mechanic in the cornice, skylight and roofing business as SOLICITOR and ESTIMATER; give full particulars as to ability and experience and state age, if married or single, and salary expected. "Thorough," care *The Metal Worker*, New York. June 28

TINNER; to a good, sober workman I can give steady work every day in the year; wages, 25 cents per hour. J. H. Jones, 414 East Main street, Streator, Ill. June 28

A TINNER to take charge of shop. H. G. Cormick, Centralia, Ill. June 28

A first-class STEAM and HOT WATER FITTER; must be able to work from plans; steady employment and good wages to the right man; write, giving references, experience and wages wanted. Whitmore & Whitmore, Rochester, N. Y. June 21

Steady employment to a good TINNER who understands plumbing; good job for the right man. F. A. Laraway, Cleveland, N. Y. June 21

Six CORNICE and SKYLIGHT WORKERS; only first-class men need apply; don't write; come prepared for work; union shop, eight hours. Hugh C. Lendrim, 82 and 84 Clay street, Paterson, N. J. June 21

TINSMITHS, WASH BOILER MAKERS and SOLDERERS. Address or apply 120 North street, Boston, Mass. June 21

SLATER and TINNER on outside work; steady job the year around to a good workman. P. H. Bayley, Sidney, Ohio. June 21

Wanted, a man who thoroughly understands NICKEL PLATING in stove works; one who can handle labor to the best advantage; state age, experience, &c. Address "Nickel Plating," care *The Metal Worker*, 1205 Chemical Building, St. Louis, Mo. June 21

A thoroughly reliable SOLICITOR and ESTIMATOR for cornice, skylight, slate and tile roofing; answer, giving fullest particulars as to ability, also age, nationality and salary expected, and list of references. "L. B. C. Company," Room 214, 145 La Salle street, Chicago, Ill. June 21

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TINSMITH; state experience in roofing and furnace work and wages wanted; steady work for reliable man. J. H. Brown, 372 North street, Rochester, N. Y. June 21

Two TINNERS; steady work all the year; must be good men. E. C. Josten, La Crosse, Wis. June 21

Several experienced men for RIVETING CORRUGATED ROOFING AND SIDING to steel frame work; state wages wanted. "I.," care *The Metal Worker*, New York. June 21

SITUATIONS WANTED.

By an all around TINNER, a steady job; used to inside and outside work, heating and general jobbing; moderate wages for steady position. Charles Dutcher, 751 Superior street, Cleveland, Ohio. June 28

By sober, industrious young man, 32 years old, 15 years' experience, position as FOREMAN or charge of die and press room on sheet metal work; understands can work thoroughly; good executive ability in handling help; am thoroughly competent; acted as foreman for 11 years. "Competent," 29 East Main street, Bradford, Pa. June 28

PLUMBER; 16 years' experience; A1 at jobbing, also furnaces, heaters and ranges; married; wages, $18. "Lean," care *The Metal Worker*, New York. June 28

By TIN and METAL ROOFER of long experience; good at jobbing trade. H. Poicek, 133 Avenue C, New York. June 28

By a man of 20 years' experience at furnace work, roofing, pump work, stove and range repairs; fair knowledge of hot water and combination heating; in fact, a good, all round man for a country town; country preferred. J. J. Smith, General Delivery, Portland, Maine. June 28

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By an ERECTING MECHANIC who understands the blower system; capable of taking charge of large jobs or taking work on contract; has traveled extensively on blower work; 32 years and married; good reference. "Sheet Iron Worker," 4945 Girard avenue, Philadelphia, Pa. June 28

Steady job by first-class PLUMBER; ten years' experience; steady and reliable; references if desired. Robert F. Williams, Box 22, West Pittsfield, Mass. June 28

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By an all round man in the line of tinning, copper and sheet iron work; 44 years of age; understand furnace work, piping, gas, water and lead piping; wish steady employment. "H. E. S.," Waterbury, Conn. June 28

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As FOREMAN or SALESMAN, by an all around master plumber and heating apparatus man; can solicit, superintend and make plans of all kinds of heating; would travel and sell on part salary and commission plumbing supplies or heating apparatus, East or West; A1 references. "M.," 1 Bond place, Springfield, Mass. June 21

By PLUMBER; first-class, in country. George Snyder, 537 East Eighty-eighth street, New York. June 21

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By a PLUMBER; also understand steam, hot water and furnace heating; can furnish the best of references; am strictly temperate, honest and reliable; understand either city or country work. "Plumber," Box 185, Billerica, Mass. June 21

As ESTIMATOR and to take off quantities for roofing, cornices and skylights; am at present employed; have had 16 years' experience; acquainted among builders and architects. "Architectural," care *The Metal Worker*, New York. June 21

With some good house as a SALESMAN; have long experience as stove and tinware salesman; can speak German and English; have sold in New York State, Connecticut and New Jersey. "Hustler," care *The Metal Worker*, New York. June 21

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By a first-class TINNER and FURNACE HAND, with some first-class firm; able to give estimates on all kinds of work; Middle States preferred. "P. A. C.," Wellston P. O., St. Louis County, Mo. June 21

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By a thoroughly reliable and trustworthy young man in office of stove house, New York City preferred. "G. H. D.," care *The Metal Worker*, New York. June 14

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Plumbing, Heating and Tinning business in a growing town of 3,000 population in Eastern Mass. Town has water works and is putting in sewers. Only shop in town. Is an extra good chance. Have a good set of tinners' and piping tools, stoves, tinware, etc. $600 buys it, if taken now. Will sell on easy terms. Good reason for selling. Address

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Blue Print sent if desired.

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Auld & Conger Slate Dresser and six adjustable Roofing Jacks.

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New Business, A Money Maker.

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METAL STAMPING PLANT, Hammer, Saw, Shafting, etc., with about 400 plaster paris stock patterns. A genuine bargain.

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At a bargain, a stove, furnace, tin roofing and housefurnishing business, established for 32 years, in a thriving Pennsylvania town of 15,000. Doing a business of $20,000 per year. Have other business. Address "Y. Z.," care *The Metal Worker*, New York.

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A Patent of merit, with all patterns. Catalogues. Everything complete to do business. Pays 100 per cent. profit. Sold throughout steam fittings trade.

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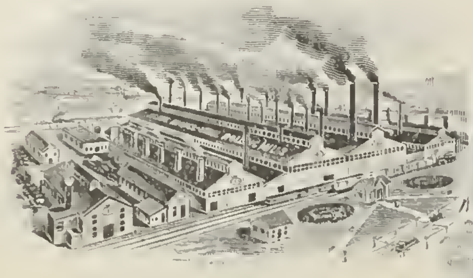

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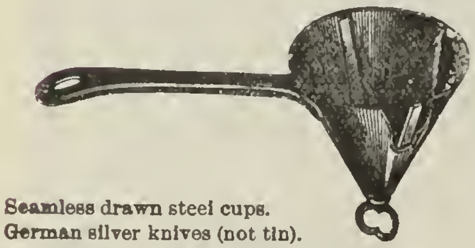

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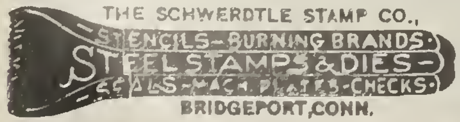

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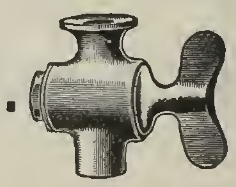

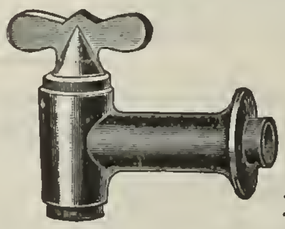

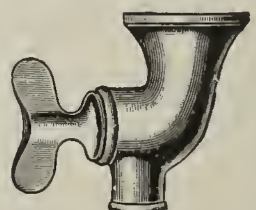

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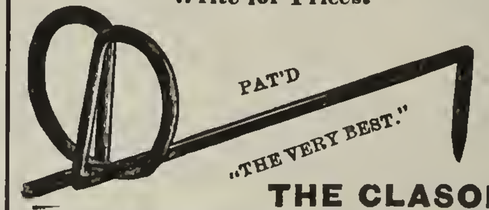

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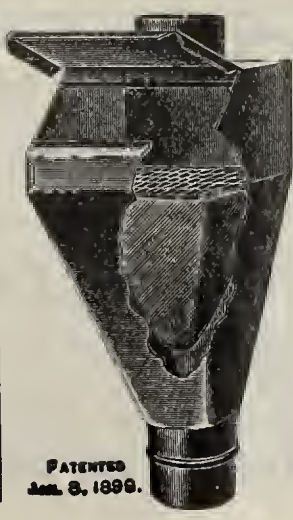

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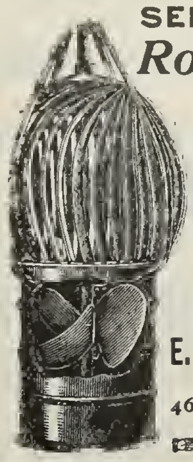

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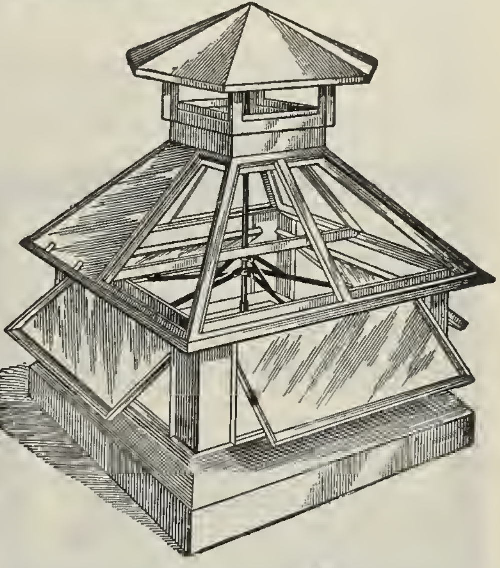

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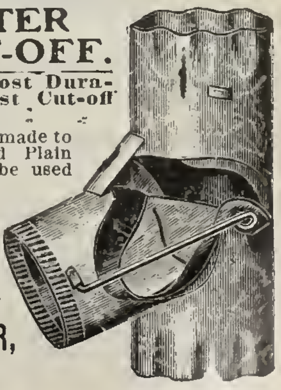

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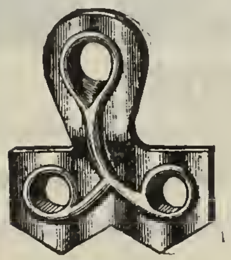
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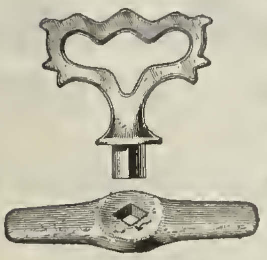
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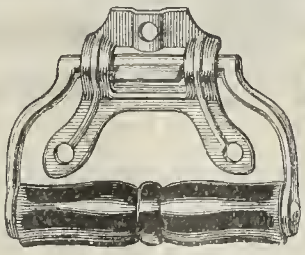
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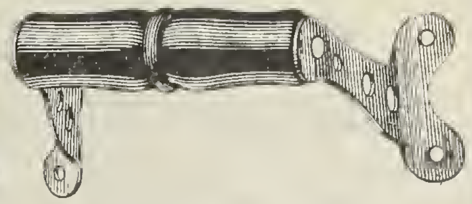
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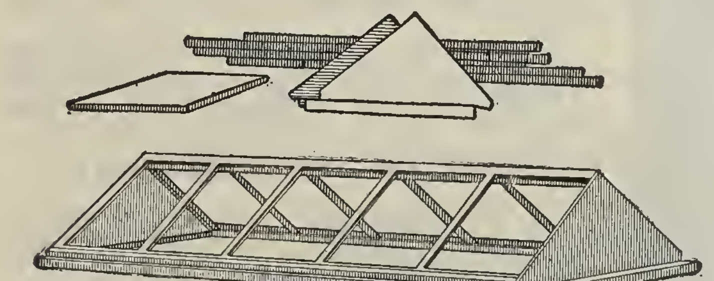

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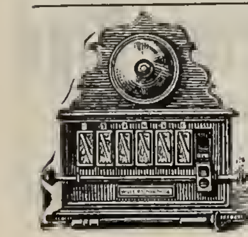

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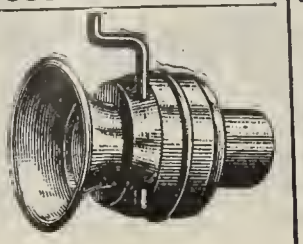

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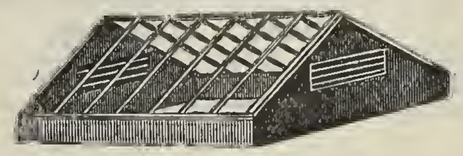

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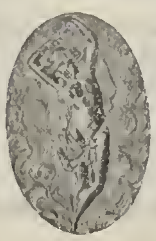

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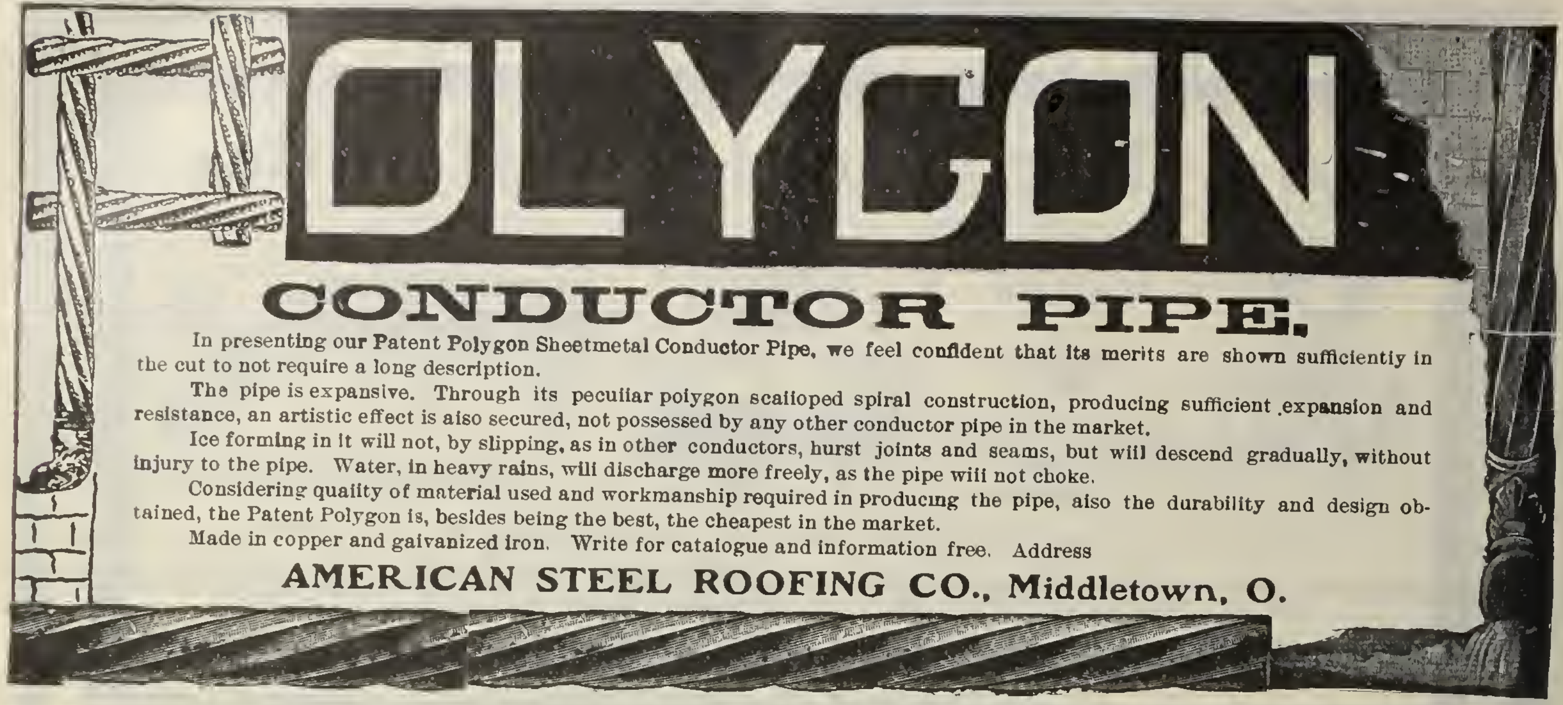

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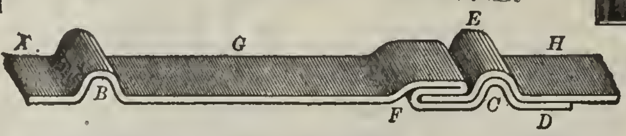

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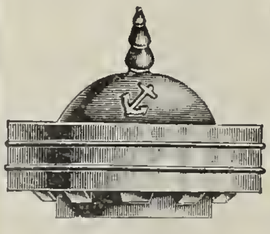

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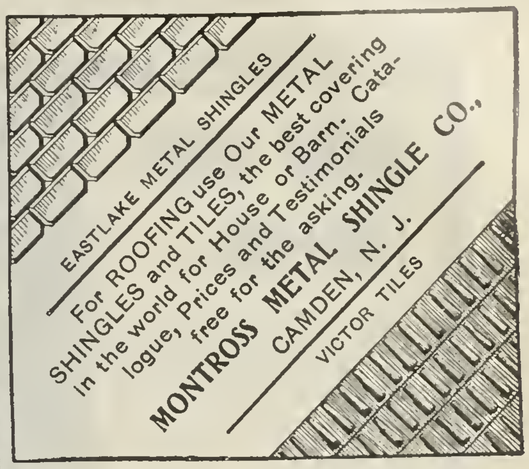

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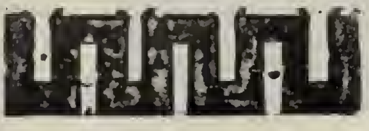

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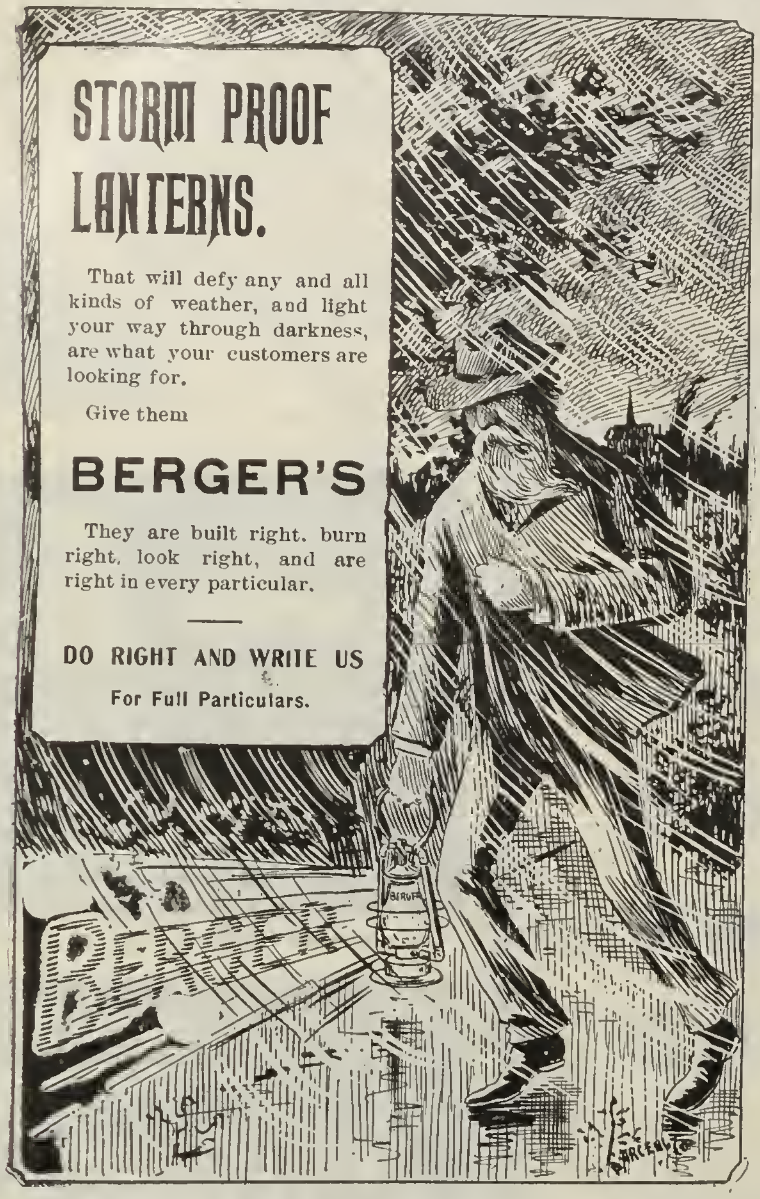

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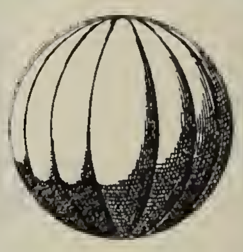

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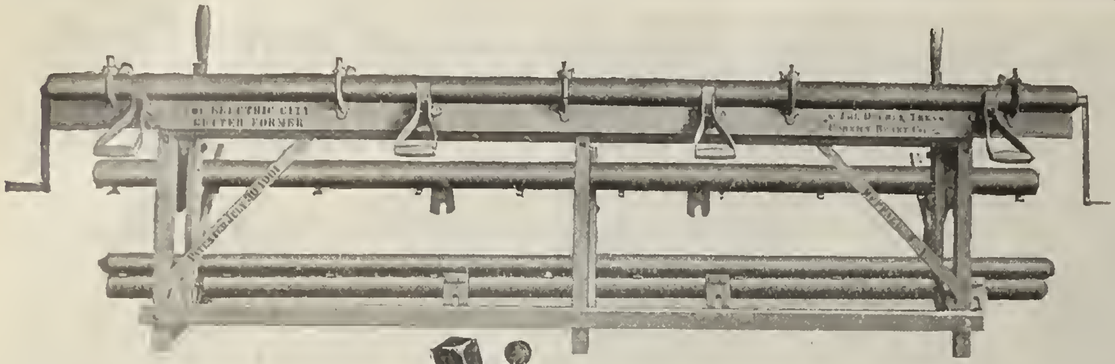

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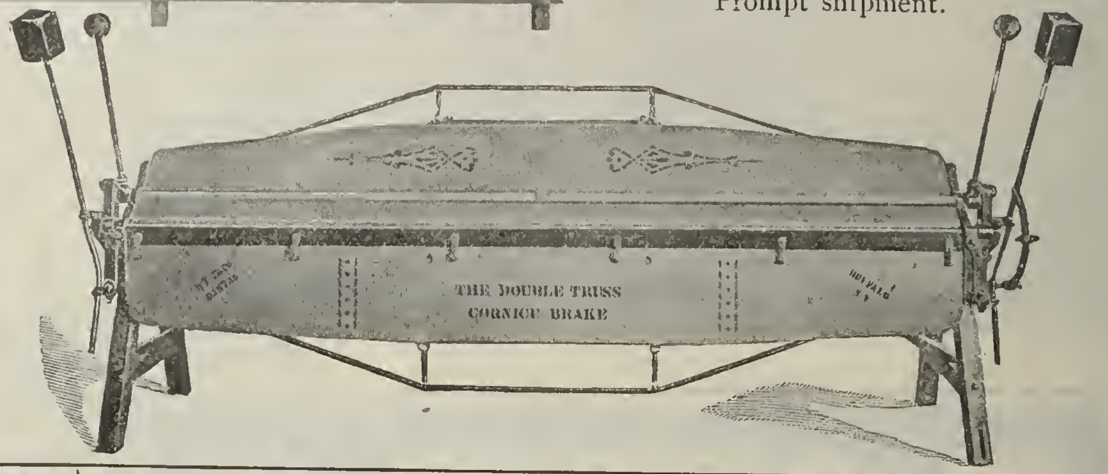

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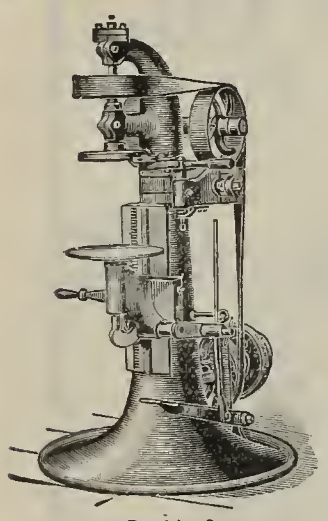

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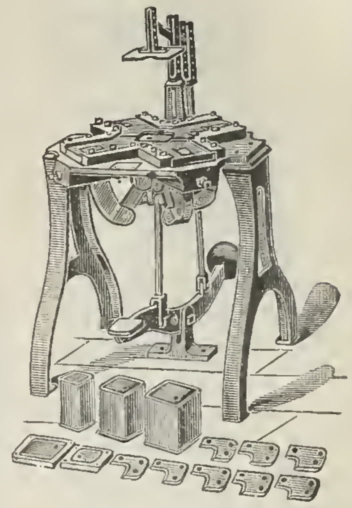

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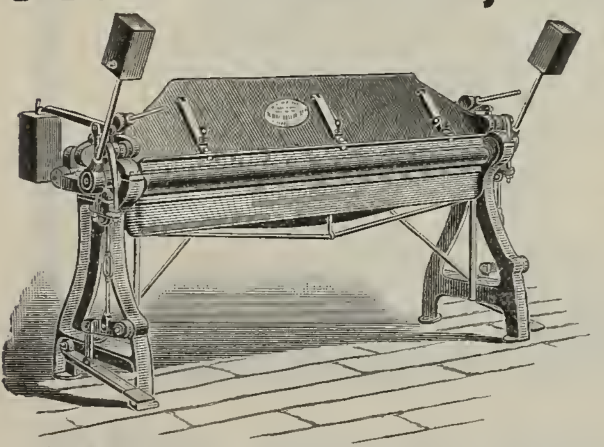

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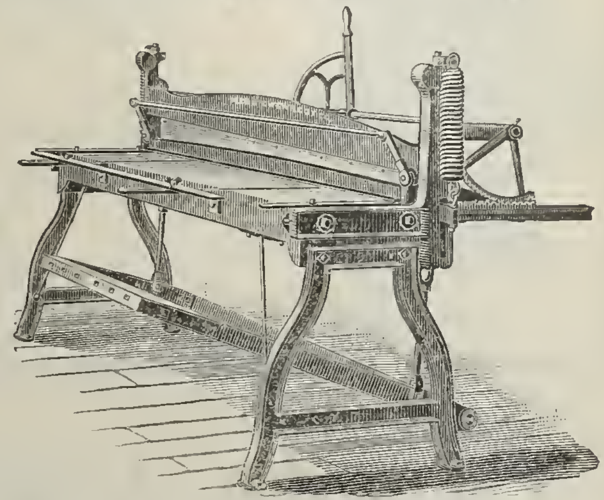

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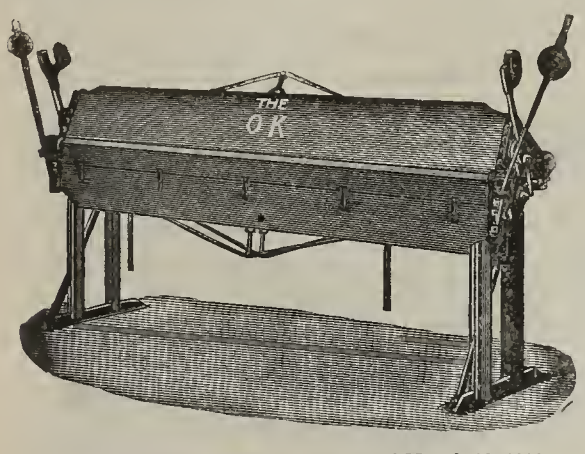

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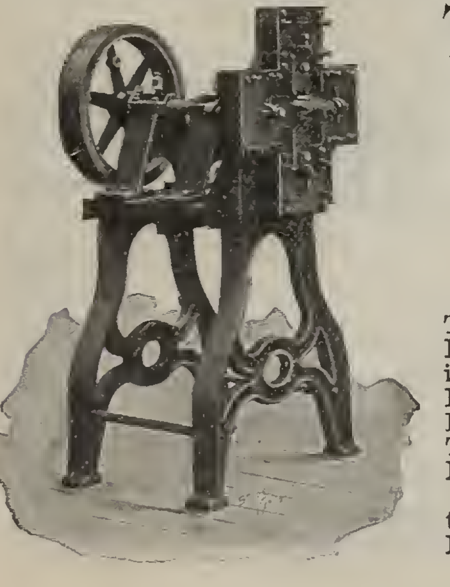

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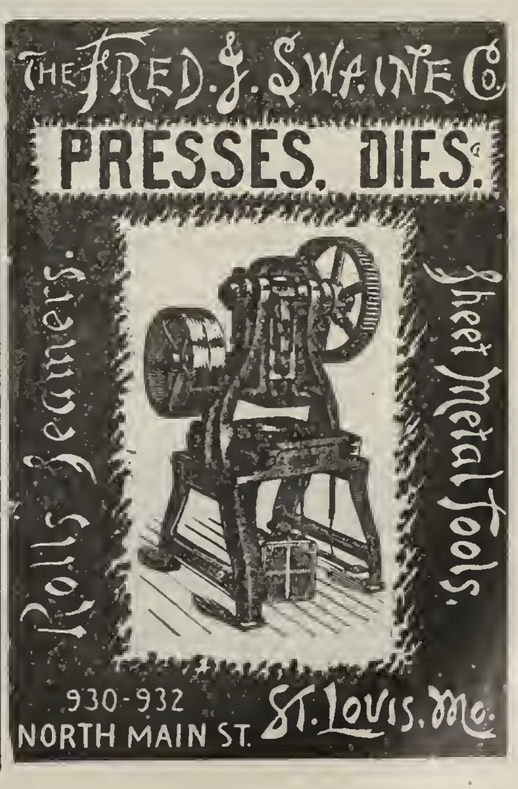

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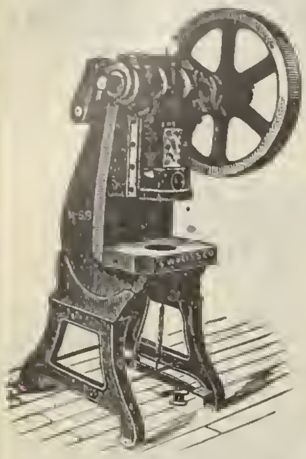

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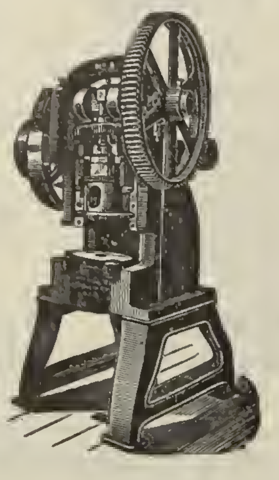

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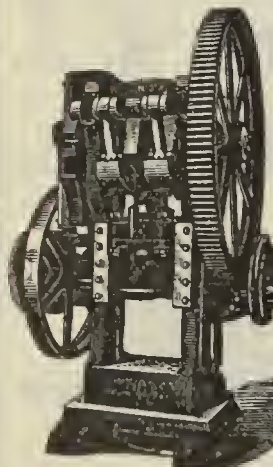

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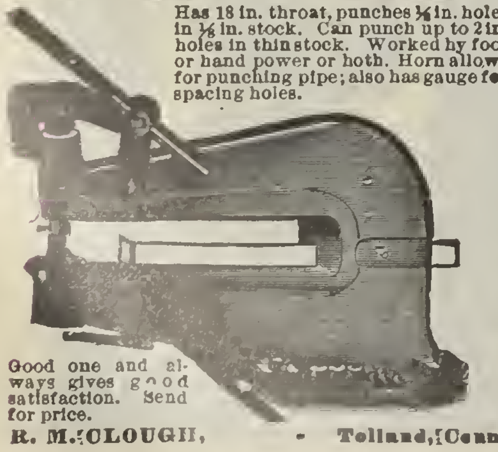

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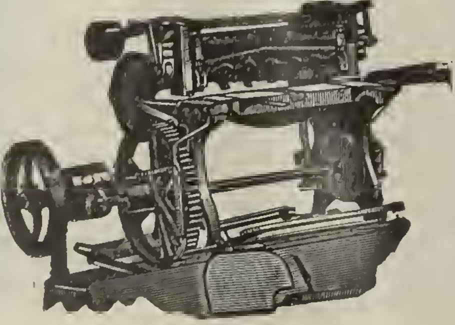

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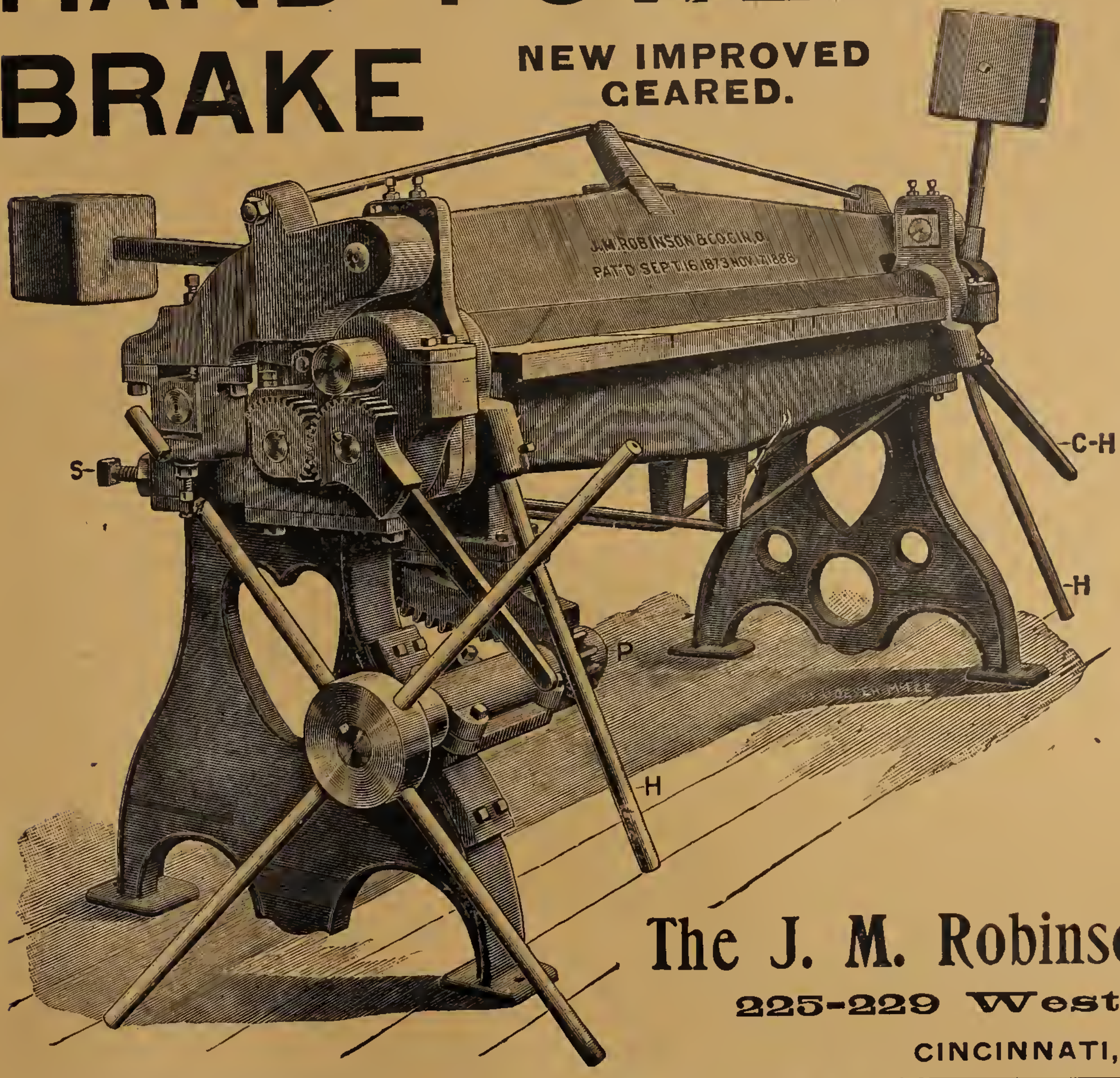

6 AND 8 FOOT.

Will bend No. 14 gauge and lighter, or when double geared with hand power will bend No. 10 gauge in 6 and 8 foot lengths. Write for descriptive circular and prices.

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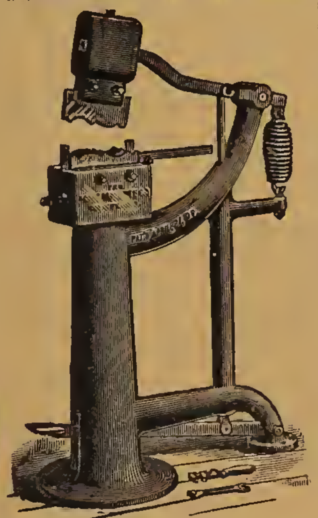

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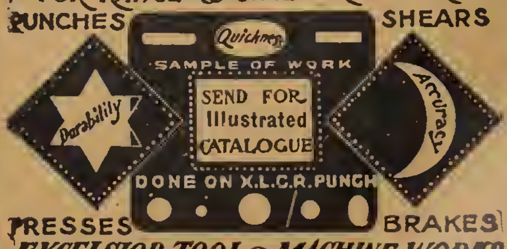

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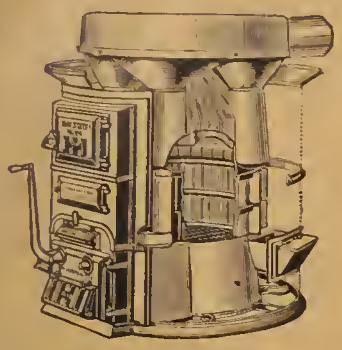

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